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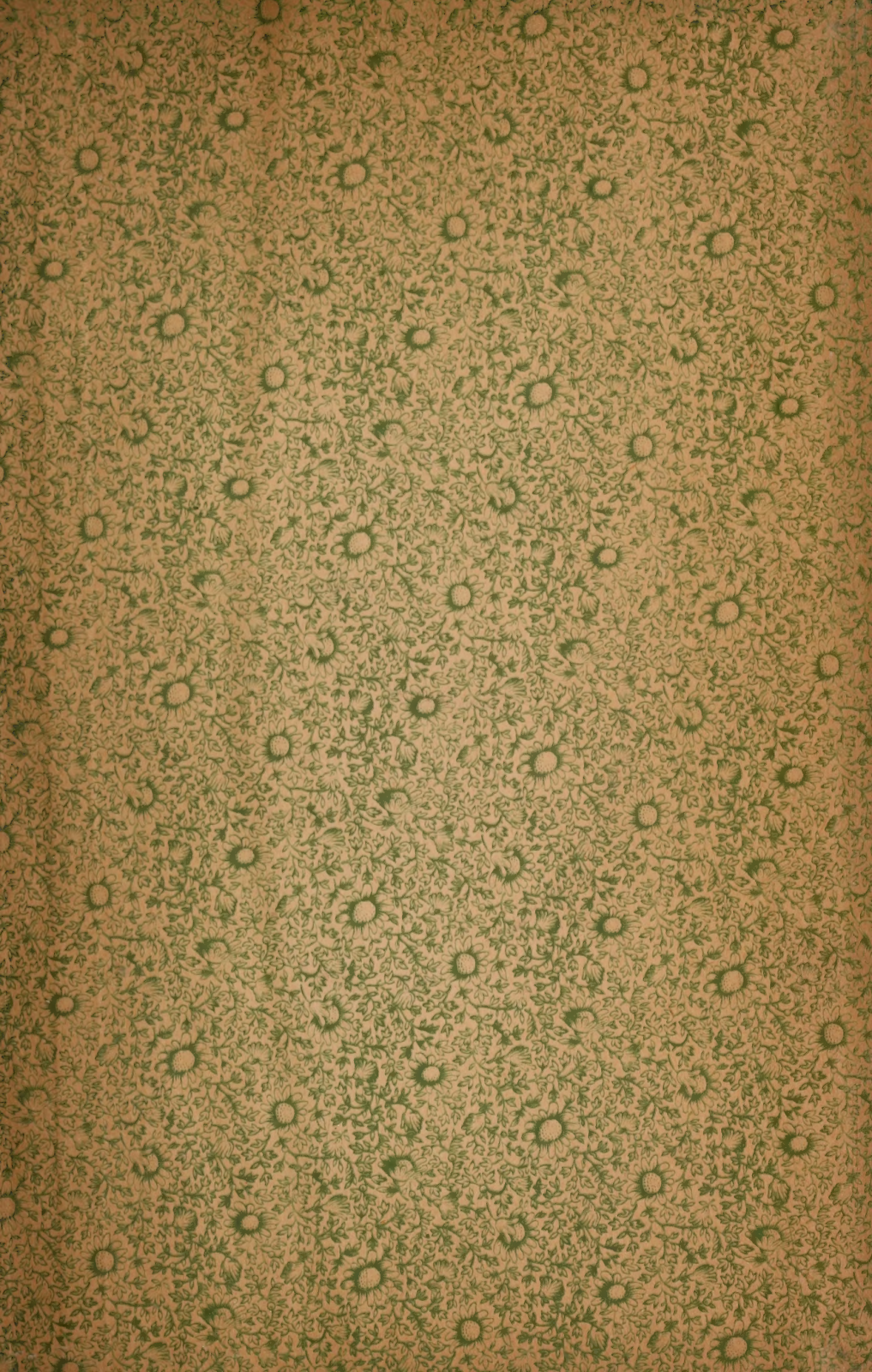
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THE DENTAL REVIEW.

DEVOTED TO THE ADVANCEMENT OF
DENTAL SCIENCE.

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THE DENTAL REVIEW.

VOL. V.

CHICAGO, JANUARY 15, 1891.

No. 1.

ORIGINAL COMMUNICATIONS.

RESORPTION OF THE ROOTS OF DECIDUOUS TEETH.*

BY A. A. H. HAMER, TAND-ARTS, NETHERLANDS.

HISTORICAL INTRODUCTION.

The question, how the normal resorption of the milk-teeth takes place, and what is the function of the so-called giant-cells of Virchow, or myeloplaxes of Robin, is in close connection with the resorption of the bone-tissue, in which we see likewise giant-cells appear that destroy on one side, what was newly formed on the other.

To come therefore to a clear idea of what is known about these peculiar cellular forms, it will first of all be necessary to give a short account of their history.

The first investigator that formed an idea of the development of the bone-tissue, was Nestbitt(1781). In his "Human Osteogeny," he was the first to advance the hypothesis that cartilage does not change into bone directly by induration, but that it disappears entirely, and is replaced by bone-tissue. He spoke besides of the influence of the soft parts on the form of bone. He does not, however, explain the cavities made by resorption, but he tells of compression of the bone-substance. According to him the cranial fossæ in which the blood-vessels are situated, must have been formed by compression.

Duhamel spoke for the first time in 1750 of the part the

* Extracts from an answer to a prize essay published by the Medical Faculty of the University in Utrecht, by W. Van Der Hoeven and A. A. H. Hamer.

periosteum had to act. He was the first to use madder as food in the study of bone development, by which the newly formed layers are stained red, and by which one can judge of the age of the different layers. But notwithstanding he rendered in this way the theory of deposition of bone through the periosteum possible, he still adhered to the so-called expansion theory, which allows the medullary cavity to enlarge itself and explains in this way the growth of bone.

Hunter was the first who expressed his opinion about one of the most important factors in the growth of bone, namely, resorption. He supposed this to occur in two places, and for a two-fold purpose.

1. Resorption at the surface of the medullary cavity for the growth of the bone.

2. Resorption at the ends of the bone, to retain the shape of it.

He was besides already acquainted with the fact that before the shedding of the milk-teeth, their roots, as well as the alveolus, had been resorbed.

Very little value was attached to these facts stated by Hunter, and it was a considerable time before other philosophers appreciated and made use of them.

Until 1845, at least in France and Germany, no attention was paid to "Äussere Resorption," then Flourens appeared with the same theory, supported by experiments on animals, feeding them on madder, and driving metal pins into medullary bones. He supposes the periosteum to change into cartilage, and this again into bone-substance; and in proportion as new layers are formed at the outside, old ones are resorbed at the inside. The former process to take place through the periosteum, the latter through a "membrane médullaire ou périoste interne." He found besides, that the medullary substance can likewise produce bone when the exterior periosteum has been removed.

Hugueny and Brullé went still further and came to the following conclusions:

1. As well inside as outside, bone-substance can be formed.
2. Where there is no opposition, there will be resorption.
3. In order to retain the shape, resorption takes place at the extremities of the medullary bones.
4. Periosteum and "membrane médullaire" have the same properties, but different functions.

They lay stress on the fact that external resorption also takes

place, and that it is chiefly this resorption that settles the future shape of the bone.

In 1850 appeared Kölliker's experiments respecting the above-mentioned resorption. He also attached great value to the external process and chiefly at the crania; and explained in this way different facts, among others the remaining patulus of the foramina at the crania, etc. He also supposed resorption in other places, that form in some measure a transition to internal resorption.

He did not express himself fully as to the process of the shedding of the milk-teeth; he indeed noticed that their roots disappeared, but is unable to explain how this comes about.

In 1853, Virchow came to the same conclusions and explained through external absorption, viz: at the inner surface the growth of the crania.

At about the same time microscopic investigations on this subject were commenced. Some time before, Howship had already spoken of excavations which appear in the process, and supposed that the soft parts that fill these excavations had something to do with the resorption process. Closer investigations were made by Tomes and de Morgan, who also found the same crescent-shaped excavations at the roots of milk-teeth which are being shed. They also found that resorption took place through cells which they could not distinguish from osteoblasts. According to them these cells not only had the power to appropriate bone-substance, but also the same cells could deposit bone.

In 1859, Tomes made diagrams of roots which were being resorbed, and observes that in the grooves cells are often met with analogous to Robin's myeloplaxes.

Virchow expressed his opinion in 1852 as to the subject of Howship's lacunæ, but considered them as the limit of the territories of the different bone-cells. If these cells are destroyed, the bone that is fed by these cells, is resorbed.

Lieberkühn observed these lacunæ, gave a description of them as they appear in the shedding of the horns of deer and the roots of the milk-teeth. He was opposed to the hypothesis of Virchow.

Lovén (1863) supposed that bone is resorbed by the surrounding tissue, but he also discovered giant-cells, the importance of which he did not know, however. He thought these cells might be bone-cells which had coalesced.

In 1867, Kehrler published a short treatise in which he advanced

the hypothesis that bone was broken down by protoplasmatic offshoots of the surrounding cells, which absorb in their bodies the remaining tissue. He even believes to have seen lime-globules in the contents of the cells.

Kehrer found as Lieberkühn has done—as we shall see by and by—that the resorbing surface showed a neutral or alkaline, and not an acid reaction.

In 1867 Lieberkühn resumed his researches and tried to determine the places where the resorption of the roots of teeth first appears.

He found that in general the first appearance is in those places where the future and permanent tooth will touch the roots. But he also found that the resorption occurs in places where the permanent tooth is not in actual contact with the milk-tooth, for instance: the second incisors of the upper jaw shows resorption at a point which comes in contact with the first permanent incisors. According to Lieberkühn, there can be no doubt that pressure is the chief cause for resorption.

The persistence of deciduous teeth with persons in advanced age Lieberkühn attributes to the absence of the permanent tooth; abnormal late shedding of milk-teeth, may be explained by this cause. Lieberkühn also tried to explain the nature of resorption. He applied litmus paper, but always found an alkaline reaction. According to Lieberkühn, this accounts for the fact that lactic acid is not an active agent, as has been supposed by earlier investigators; but probably it could be explained by the presence of ferments which were originated through the decomposition of glutinous substances.

Emil Hermann, in his thesis (1869) combated the hypothesis that pressure might be the cause of resorption. He showed the constant presence of granulation tissue between the deciduous and the permanent tooth, and that now and then the resorption commenced at the labial surface. To this may be objected that the permanent tooth may press against the temporary one, and that the pressure may be conveyed to the other side of the tooth and then against the jaw. Moreover, it is possible that this may happen when the permanent tooth presses against the labial surface of the milk-tooth. Yet he accepted pressure as one of the causes of resorption, but explained it as an irritation of the granulation tissue, in this way producing proliferation of the tissue that would

cause resorption. Later on, when the entire root has disappeared pressure would cause the removal of the crown of the temporary tooth.

Under special circumstances he found that pressure ceased and at the same time the resorption came to an end; and the resorbing surface changed into an ossifying one. As soon as the proliferation tissue has perforated the entire root it unites with the pulp-tissue, and together continue the resorption process. He was opposed to the view of Tomes, where the latter claims to have found myeloid cells and classed them as giant-cells; only in a small number of cases could he detect a few of these cells.

In connection with Kehrer, Gutheim published in 1871, theories which were opposed to all that had been advanced so far regarding that part of the roots of the milk-teeth that was first resorbed lying closest to the permanent teeth. This they denied, but suggested a "*präliminaire Einschmelzung der Mittelschichten der Wurzelwand, bie Erhaltung der Rinde.*"

The first step of the resorption process would be the disappearance of the most central part, oldest cement layer, the outermost layer of the dentine. In the cavities thus formed the outermost layers of the cement would be pressed, and afterward the most peripheric layers of cement would be resorbed. They supported their views on the appearance of cavities at the periphery of the dentine which are filled up with cement. These would be the peripheric layers of cement which are driven to the inside after the preliminary resorption.

This may however be explained in a much simpler way by supposing that in these places real resorption has occurred, but that it has ceased and has been replaced by new bone apposition. Moreover, such boundary lines between dentine and cement run sometimes very far to the inside, as will be seen from the drawing on page 6.

Besides, the quantity of bone tissue in the filled-up cavity is much too large to result from the comparatively small quantity of cement found at the outside of the normal root of the milk-tooth. Again, such displacement of cement, therefore of bone, is entirely opposed to the facts discovered by other investigators, who, just to evade this difficulty in the growth of bones, rejected the expansion theory and created the resorption—apposition theory. Other grounds might be adduced, but we trust that we have said enough

to prove the unsustainability of the so-called preliminary resorption process.

Gutheim points out that he has never seen images, as with osteomalacia with which a solution of lime-salts preceded the resorption of the glue-yielding substance, and wants therefore to



FIG. 1.

emphasize that inorganic and organic substances disappear at the same time. Even in the very last degrees of the process he found the nutrition of the milk-tooth normal. According to him it is therefore not likely that the blood-vessels of the pulpa obliterate previously, either by direct pressure of the permanent tooth, or by

other causes. Blood-vessels and nerves do not show any retrogressive metamorphosis. In the caruncle, the tissue that surrounds the root of the milk-tooth that will be resorbed, he found distinctly in the midst of a mass that looks like mucous tissue of Virchow, myeloplaxes partly at the surface, partly at the inside, as great masses of protoplasma of different shape and provided with a number of nuclei.

Gutheim also supposes that pressure is the first factor for the process. He is opposed to the opinion of Hunter and Tomes, and points out that very often in other places soft tissues can replace hard bone-substance (aneurysmata, tumors, etc.) He also observed cases in which with abnormal growth of the permanent teeth, the milk-teeth are not resorbed and eliminated. This pleads the more for the fact that the growth of the permanent tooth is the primary cause. It is not clear to him how pressure can cause resorption. Probably the venæ are narrowed, and we find engorgement and more infiltration in the tissue; probably the current of plasma is increased by the presence of fast-growing young tissue (the caruncle with the tooth sac). The increased tissue-current might then by its alkaline salts dissolve the carbonates and phosphates, and change the glue-yielding substance into soluble alkaline albuminate. He does not think it a proof for the absence of free acid because the resorption surface has not an acid reaction, for it might have been neutralized in a short time by the surrounding alkaline fluid of the tissue. He cannot accept a mechanical eating away of the tooth-substance by the cells of the young surrounding tissue.

In 1872, an interesting communication was made by Wegner. He examined cases in which by some cause or other there was an abnormal pressure inside the cranium, by which pressure the interior was partly resorbed. The tabula vitrea had a rough surface, and had disappeared in many places; and at the outside of the dura mater he found an abnormal quantity of myeloplaxes. He also examined other cases of bone-resorption which were caused through pressure of soft parts (aneurysmata, tumors). He found the same changes everywhere. He investigated into the position of the myeloplaxes and found that they always follow the direction of the blood-vessels. He even perceived transitory forms of the cells that form the vascular membrane, and supposed therefore that the giant-cells were formed by proliferation of those cells. He saw no changes at the bone-cells, neither proliferation nor fatty

degeneration. The bone-cells were therefore perfectly indifferent. He even supposed new vessels to be formed from giant-cells. Generally the cells change into spindle-shaped protoplasmatic masses, each provided with a nucleus, which change into the dura mater tissue. He saw in some giant-cells particles—"kalk-krümmel," as he calls them--the size of which varied between the size of the smallest particles and that of red blood-corpuscles. Often the giant-cells were united by off-shoots, and formed then sometimes membranes with openings here and there.

We enter a new period in the investigations respecting bone-resorption with the results to which Kölliker arrived, and which he published in some smaller treatise and afterward in his work, "*Die Normale Resorption der Knochengewebe*."

His results are chiefly summarized in the following: Everywhere where bone or tooth-tissue is exposed to normal resorption, two elements appear constantly, viz: Howship's lacunæ and myeloplaxes. The latter because of their function, are called osteoclasts. The Howship's lacunæ of varying shape and size always have sharp edges. The bone-cells close to them do not show the least change. With the milk-teeth as well as with ivory pins driven into bone, the lacunæ are the same as with bone. The osteoclasts have different shapes, and the protoplasma sometimes contains a considerable number of round or oval-shaped nuclei. Kölliker saw at many giant-cells a layer which he compared with the exterior layer of epithelia of the intestine. He even saw sometimes off-shoots at these cells resembling ciliæ, but he did not find contractility, even after heating.

In the protoplasma a number of nuclei may be observed that do not move, dissolve in alkali and only swell up in acetic acid. In giant-cells of milk-teeth, he found in some cases the "kalk-krümmel" discovered before him by Wegner in a pathologic case. Treated with $\frac{1}{2}$ per cent NaCl. solution, the ground-substance appears at the edge in the shape of clear drops. The nuclei varying in number are found evenly dispersed or in groups. They seem to be wanting in some cases, but can be made visible by different reactions.

Kölliker never saw the reticulum of osteoclasts, as Wegner had done. He also found giant-cells forming themselves amidst osteoblasts, without any connection with the vascular membrane. He even found transitory forms between osteoblasts and giant-cells.

He does not deny Wegner's theory entirely. He thinks that, probably under special circumstances, proliferation of the cells of the vascular membrane may cause their origin. Kölliker believes the giant-cells, after having performed their function, or when the resorption surface changes again into an apposition surface, to pass into osteoblasts, while Wegner on the other hand affirms that they change into connective tissue or medullary cells. At the boundary of resorption and apposition surfaces, Kölliker saw Howship's lacunæ as well as the osteoclasts decrease in size and change at last into osteoblasts. Thus it seems giant-cells break up and lose at the same time their resorbing power but get the opposed function, the formation of bone. Kölliker speaks very little about the resorption of milk-teeth. As we cannot think of osteoblasts in this case they may be formed out of the connective tissue of the dentinal sac of the growing permanent tooth. In many cases the osteoclasts which remove the alveolus for the permanent tooth and open at the side of the milk-tooth are likely to act their part when the alveolar coat has been perforated. How the resorption through the osteoclasts is effected, is a question to which Kölliker cannot give a decisive answer, but he points to the following facts, that throw some light on the question :

1. Resorption of lime-salts does not precede resorption of the organic substance, as takes place with osteomalacia.
2. It cannot be accepted that hard bone substance crumbles away. Howship's lacunæ show everywhere smooth, sharp edges. The only thing that could sustain the theory is the fact that pieces of lime are found in giant-cells—especially in those of milk teeth.
3. An acid reaction cannot be proved at the resorption surface.
4. When chemical resorption takes place—which is the only thing possible—this exerts no influence at a distance, apposition surface often lying against resorption surface.
5. Reactions on the formation of a ferment in the osteoclasts give a negative result.

Osteoclasts, therefore, are formed from osteoblasts when the apposition surface changes into a resorption surface, and vice versa. In a normal state apposition would occur, but if by some cause or other an exterior pressure acts on the tissue that forms the bone, the function of it is changed into a resorbing one. This is clear, especially with the growth of the permanent tooth. The pressure exerted by it would have a stimulating influence on the

osteoblasts on the inside of the alveolus, and change them into osteoclasts.

After Kölliker, many others have made bone-resorption a subject of investigation. The osteoclast theory was accepted by many, combated by others. Several investigators thought that giant-cells were not formed from osteoblasts but from blood-vessels (as was formerly supposed), or from bone-cells, as Heitzmann accepted. Ziegler found that bone tissue could change into connective tissue. At the same time he rejects the theory of specific action of the giant-cells in the passive disappearance of bone-substance.

Lastly we will speak of Kassowitz, who advanced new theories : Kassowitz lays the stress on the connection between the distribution of the blood-vessels and the appearance of Howship's lacunæ. The latter he divided into two forms :

1. Larger grooves, immediately depending on the distribution of the blood-vessels ; and
2. Smaller ones, in which the giant-cells are situated.

The latter he always found in places where formerly bone had been. In the places where the giant-cells are, we often find spindle-shaped cells, so that it seems as if the latter had been formed out of the former. The same element he found with shedding horns of deer and milk-teeth that are being resorbed. Together with the usual resorption-surfaces with Howship's lacunæ and giant-cells, he also accepted a so-called linear resorption theory with which those elements fail which were thought until this time to be characteristic. With both forms of resorption he always found the bloodvessels at a fixed distance from the bone-limit.

His hypothesis is, therefore, that the blood-vessels cause a current of fluid which prevents the deposition of lime-salts and dissolves them if they had been formed previously. Around every blood-vessel there is therefore a territory in which no deposition of lime-salts is possible. If the vessel becomes wider or if it approaches the bone by some cause or other, for instance external pressure, this territory is enlarged or changes its place, and further resorption of lime-salts takes place. All processes with which resorption of bone of tooth-tissue takes place, are therefore founded on this fact, that the resorbing blood-vessels of the periosteum, which is rich in blood-vessels, come closer to the bone by pressure of the surrounding organs or by the growth or new formation of blood-

vessels. Also the growing permanent tooth presses its external coat, which is richly supplied with blood-vessels, first against the bony partition, afterward against the root of the milk-tooth and causes this root to resorb. The giant-cells would be the remains of the resorbed tissue deprived of its lime-salts and fibrils. Here, however, Kassowitz is not clear in his description. First he considers fibrils to be removed; afterward he supposes that in giant-cells fibrils may be found (the swelling nuclei and fibers disappearing with acetic acid). He believes "*die freigewordene lebende Grundlage des Knochengewebes*" to change into giant-cells. He likewise affirms that bone corpuscles change into giant-cells, but the nuclei of the former do not change into the nuclei of the latter. It seems as though he believes bone-cells to be resorbed by giant-cells as foreign substances. But where is then the origin of the living protoplasmatic mass of giant-cells? The thesis "*omnis cellula e cellula*," is not yet overthrown. In this respect Kassowitz is not very clear.

If the resorption is slow, no formation of giant-cells takes place, and the matrix of the bone passes directly into the surrounding tissue; if on the other hand there is rapid and intensive resorption, very large giant-cells are formed. The form, direction and growth of the vessels fix therefore that of the bone-tissue, and not the cells surrounding the latter and resorbing it according to Kölliker.

Kassowitz cut at one side the nervus ischiadicus and saw the tonus of the vasomotoric nerves was lost, as with the experiment of Cl. Bernard on the ear of the rabbit. The blood-vessels are widened, the territory governed by them enlarged, the internal as well as the external resorption increases, the apposition decreases, the absolute as well as the specific gravity of the bone is lessened. These facts would plead for his theory. The deposition of bone-substance he explained through the removing of blood-vessels or their decrease in number. The surrounding territory in which no deposition of lime-salts is possible becomes smaller, by which, part of the lime-salts dissolved in the tissue-fluid precipitate.

Against Kölliker's theory respecting the origin of osteoclasts he advances:

1. The same elements would now precipitate lime-salts, then resorb them.
2. When senile changes take place no more osteoblasts are to be found.

If the giant cells originate from the bone-substance, some coherence must exist between cells and bone. And this coherence exists indeed according to Kassowitz; the fine ciliary off-shoots, which Kölliker observed as giant-cells are supposed to be the remains of bone-fibrils. Besides in microscopic cuts the giant-cells often remain closely connected with the bone.

These are in short the new theories of Kassowitz. After him little has been published as far as regards the milk-teeth. Kassowitz may therefore close the historical introduction.

(TO BE CONTINUED.)

THE ART OF EXPRESSION IN ITS RELATION TO PROSTHESIS.

BY DR. J. H. WOOLLEY, CHICAGO, ILL.

The human face is a closed book to those who have not analyzed it from an artist's point of view.

The sculptor can model the head of a Napoleon, or Richelieu and show the dominant traits and characteristics, because each line, curve, and fold of the skin, every separate organ is properly correlated one to the other with certain shadings and accentuations, all combined to give emphasis and meaning to the character and reveal the emotions stirring within.

To gain all this, the different traits and characteristics as expressed in the face should be studied, and the features examined when the physiognomy is in action.

By close observation in this special direction, the features and accompanying expression are so photographed upon the mind that after having acquired the necessary technical knowledge, he is able, so to speak, to give life to his marble or clay.

But certain preliminary studies are necessary to accomplish all this, a knowledge of the movements of the muscles, noting certain changes in the different emotions—this knowledge being the basic principle upon which facial expression rests.

Darwin, in his studies in the evolution of animals and plants, by long and close observation of the muscular movements accompanying expression, found a series of new arguments by which, he built up in part his theory, and as some one has said, "Darwin, by invoking the association of certain useful movements, and comparing these functions with the expression with which they are associated,

sought to explain why one muscle in particular, rather than another, is affected by the expression of this and that passion."

Duchene's experiments in physiognomy in action were published some ten years before Darwin's discoveries were made known to the public, and from him Darwin received considerable help. Duchene pursued his investigations with the aid of electricity. This was performed in a very simple and delicate manner. The human face is most sensitive to the action of electricity which is unreliable when used to excite muscular action. Sensation produced by electricity, causes so much pain, that all of the muscles of the face are brought into action. Duchene experimented upon an old pensioner, who suffered from anæsthesia which allowed of his experiments, otherwise they could not have been performed. The important result of this study proved that a single muscle could be used to express certain passions, and to quote, "it was not necessary to give the face the stamp of pain, attention, menace, contempt, disgust, by changing all the features, but by a slight modification of the eye, or the lip alone the different passions were shown."

Going back to early Greek art, we are told that the sculptors deemed it necessary to study topographical anatomy.

They did not confine their attention to the expression of facial muscles alone, but included those of the whole body; both when at rest and in action; the opportunity being afforded them while watching the athletes at the Olympic games, and other places where strength and prowess were shown.

One writer says, not only were the muscles prominent exactly in their places, but more than that, "these prominences are differently accentuated in corresponding muscles on different sides, according to the nature of the movement; one side will present the muscles swelled up in a state of contraction, on the other side the muscles may be in repose, that is, relaxed, or relatively flattened."

After having gained a thorough knowledge of the movements of the muscles that control facial expression, and applying the same to the study of portraiture in clay we would be led to discover certain lines, angles, and curves, which would otherwise pass unnoticed, that reveal the inward emotions.

We can discern in the evolution of the human face the advantages of civilization or the development of that type, at first not

much removed from the savage, to that which represents the highest culture. In the former we note the expression of passion, not only most markedly in their faces but in their gesticulations, which supplement in some degree their limited knowledge of language. But the contrary is seen in more civilized races where gesticulation is restrained, for language to a very great degree is sufficient to express ideas, and in their faces we see the effects of thought and culture.

Now to briefly apply the thought to the subject under discussion, let us endeavor to touch cursorily some of the emotions that are shown in the movements of the face, such as sorrow, joy, pain, contempt, anger, etc. In sorrow, we notice that all of the muscles of the face are relaxed, the head inclines forward, the eye-brows are raised toward the middle of the forehead, the eyes droop as also the corners of the mouth. Somewhat similar are the expressions of dejection, pity and melancholy.

In joy the eyes are bright, the mouth slightly opened and the corners turned up.

In pain we notice a contraction of the eye-brows and wrinkling of the forehead, the mouth slightly open with the corners turned up.

Contempt caused by some object of disregard and criticism causes one to turn the head slightly with half closed eyes looking downward, while the corners of the lips are raised, particularly, on one side more than on the other, and the nose wrinkled. I am indebted to Chas. Weigal for these few general rules governing expression.

I could go on and describe the external expression of all the other emotions but I have cited enough for the purpose.

Now we have noticed these different expressions are controlled by certain muscles, that represent sorrow, contempt, pain, etc. We also note that the individual's life, be it one of struggle for existence out of abject poverty, disappointment, or the opposite, one of pleasure, happiness and success, all these habitual modes of thought stamp themselves upon the face and give to a very great degree the key to the nature of the individual. In all the varied emotions the mouth sustains the most important relation to the other organs of the face, therefore it must be combined harmoniously with the rest or it will produce the effect of a caricature.

This brings us directly to our subject. I do not intend to criti-

cise the dentist who has failed in properly appreciating the relation of the art of expression to prosthetics. For that a special study is needed to thoroughly qualify him in this direction, for which no means are yet offered in our text-books and dental schools. We have little or no instruction as yet in the art which teaches the proper correlation of the mouth to the other organs of the face by which one is aided in getting the highest form of expression. When we have, then the dentist will be prepared to more UNI-
FORMLY reach the best results.

We shall have what may be called in a true sense the *prosthetic art*. As the student in sculpture studies the laws governing expression, so in the same manner ought the student in mechanical dentistry. It is quite necessary for a dentist to have fitness for his profession, but in the department of prosthesis he cannot carry out the true art idea without special preparation. He must have, to a certain extent, that faculty which sculptors possess, called the creative; that which enables him, so to speak, to give life, motion and passion to his marble. It is true that nature holds in reserve her secrets, but they will be revealed to those who patiently seek for the key which unlocks her treasure. The gleam of the eye, the contour of the cheek, the delicate curve of the nostrils and the shape of the lips, those portals from which is voiced the power, or the weakness of the individual,—all these are points calling for special study. That combination of organs, which, when massed, makes up the human face is nature's crowning effort.

But a full knowledge of it must be gained by an intelligent, earnest and methodical study, by availing ourselves of the best opportunities at hand through artist's designs for attaining more perfect knowledge of the subject. The mouth is, as has been said, "the most sympathetic and expressive center of feeling." "Lava-tor calls it "the interpreter and organ of the mind and heart," and adds: "In repose, as in the infinite variety of its movements, it unites a world of character. It is eloquent in silence. "It is from the mouth that the voice issues, interpreter of the heart and of the soul, expression of feeling, of friendship, and of the purest enthusiasm."

The upper lip translates the inclination, the appetites, the disquietude of love; pride and passion contract it, cunning attenuates it, debauchery enervates and debases it, love and the passions incarnate themselves there with an inexpressible charm.

When we look at a human face, be it that of a man, woman or child; we are naturally led to ask, what are the degrees of intelligence that are hidden behind it? What gives it its strength or weakness? What is its history? What treasures of thought and experience does it reveal? This knowledge of physiognomy is helpful to us all. Its study is particularly fascinating in connection with such great leaders as Napoleon, Richelieu and others, who have controlled the actions of men. So fruitful and full of interest is this subject, that many books could be written upon it. But we must not linger from our immediate object, but apply this knowledge to Prosthesis and try to work out the problem in a way that will remand this mechanical art to its rightful place.

After the student in dentistry has devoted sufficient time to gain a knowledge of surgical, or, topographical anatomy, presupposing the aid of the dissecting-room, his studies should be directed to the Plastic Art. In this study we find certain formulas to be observed, related to proportion gained by measurements.

The best results attained are, by following closely certain methods known in the sculptor's art. The simplest and easiest is that of direct experience; the modeling of a bas relief or entire head.

The first step necessary is to mould the clay in an oval form, its greatest diameter being the facial line, *i. e.*, the line from the top of the forehead to base of chin, and divide it into four equal parts.

- 1st. From the top of the head to the roots of the hair.
- 2d. Thence to the root of the nose.
- 3d. Thence to the bottom of the nose.
- 4th. Thence to the bottom of the chin.

This last part, divided into two equal parts, will determine the bottom of the under lip. And if the upper portion is divided into three equal parts, the upper line will give the boundary of the opening of the mouth, the second line will determine the depth of the upper lip, the third line the space between the upper lip and the nose. The width of a lip from the point of the under lip will give the beginning of the chin.

The ear is equal in length to the nose and parallel to it.

The width of the eye is one-fifth the length of the nose.

The space between the eyes is equal to the length of an eye.

There may be in some cases a deviation from these general rules, but they are a few of the fundamental or basic principles upon

which the art of expression rests. They also serve to give a few hints regarding the first principles of portraiture in clay.

Robert S. Ivy, D. D. S., in the treatment of the subject of prosthesis, refers to the art of figure-drawing as a great aid in getting the true proportion of the face. But in the restoration of its last curves and angles, judgment is required, as also observation of a human face in profile. I should go farther and say this judgment is reached by modeling the face in clay from the antique, or life; for it is due to this alone, that we learn to understand its composition.

When the teeth have been removed and poorly adapted substitutes fitted, the muscles that control the mouth are misdirected, and produce a strained and unnatural expression, and we are at a loss sometimes to know wherein lies the chief difficulty.

Much has to be considered before proceeding to the restoration of that organ to its natural shape and condition. We have to study and first determine as far as possible its character.

Mantegazza considers the face from five different points of view and calls them the five different problems.

1. Condition of health or sickness.
2. Degree of beauty or of ugliness.
3. Moral worth.
4. Intellectual worth.
5. Race.

These five problems lead to five different opinions which we can form on the face of a man and which he calls

1. Physiological judgment.
2. Aesthetic.
3. Moral.
4. Intellectual.
5. Ethnic.

Now as dentists we can study these five problems.

By means of the Aesthetic we seek to give the mouth its highest form of beauty, not a shape that represents sensuousness and a low form of animalism and meanness or stupidity, or weakness, unless these qualities belong to the individual.

If the individual is a person of culture, good morals and intellectual strength we should not give to this mouth the same expression we would to Bill Sykes.

Our opinions being formed as to these five problems, we pro-

ceed carefully and systematically. The first thing being necessary is to secure a good impression, which should be taken high up on the ridges of the mouth, that the plate may be made correspondingly high on the ridge, for to this alone is due one of the essential principles of success. A trial plate of gutta-percha should then be made for the base plate, upon which to place the wax for an articulation, care being taken that at the same time to get the length of the teeth, and form the expression of the mouth, both in its contour and front.

We are enabled thus to secure the proper length of teeth. It is supposed our knowledge of physiognomy will teach us what exaggerated effect is produced on the face, either by using teeth that are too long or too short. If the former, the mouth will take on the appearance of increased age and also in some degree change the enunciation. If the teeth are too short, the appearance of the mouth will be that of stubbornness, pertinacity and aggressiveness that might be entirely opposite to the character of the individual.

Having determined the proper length of teeth, we proceed to make an articulation upon which to arrange them, being careful to preserve the outward form of the wax in the mind's eye to aid the operator in the arrangement before they are tried in the mouth. Additional advantage can be gained by studying the facial expression of the patient from a photograph taken before the extraction of the teeth. We shall then have some guide to the original shape and expression of the mouth.

Now, with a well-defined idea of the general form of the face from its different points of view and analyzing its meaning, we shall then be better prepared to execute the task before us.

Few definite rules on this point can be given, but a certain amount of the skill acquired becomes intuitive.

The dentist who has modeled in clay cannot help but acquire a certain degree of the unconscious skill that sculptors possess.

More and more in these days of rapid advancement, all along the line of medical study and practice, will the dentist be called on to meet a higher standard of mechanical and artistic excellence in his work, and to take advantage of every opportunity to put his profession in a leading rank with that of other specialists.

A DAY IN THE OFFICE.

BY DR. H. T. KING, FREMONT, NEB.

I arrive at the office promptly at eight o'clock and find I have for the day three short appointments, and to fill in the odd minutes, a set of gum teeth to grind up and a crown to polish for laboratory work.

Being my own assistant and office boy, I have only time to start fire and mount a cast on the articulator when my first patient comes in.

The complaint is, that about a year ago she had a tooth filled and it had been troubling ever since.

I examine and find that some one had tried to fill a small approximal cavity in a lower molar without space to work, and the inevitable result has been that the first time any little force was brought to bear on it the filling loosened, and for a year or more has been rolling around between the teeth. I do not like filling a tooth, even with amalgam, through a crevice, and so cut down from the face of the tooth, remove the old filling, make the cervical wall flat, the side a little undercut, and on grinding surface a decided dovetail.

The teeth are close together, I do not file or saw but when ready to fill force a piece of Brown's composition silver strip between the teeth, use amalgam pretty dry, and when packed pull the matrix out at the side. In such cases I do not apply the dam, but keep the parts dry for sufficient time to fill, with a napkin.

While finishing the filling there comes in a man with the remark that "that tooth you killed the nerve in is aching as bad as ever." I did not think it worth while to explain that I had not tried to devitalize the pulp, I had doubts about the pulp being alive the day before when I made the application. But he being a robust six-foot mechanic in the enjoyment of perfect health and full vigor of manhood, could not let me make a thorough examination for fear of being hurt, so I had rinsed out the cavity and made an application of oil of cloves, hoping it would quiet the pain, and lead him to think I had "killed the nerve." Christian science, if properly applied, is a great help in dentistry, and I often find that by making some such application for a day I can remove the decay and nicely uncover a pulp, where before I would not have been able to put an instrument into the cavity. Working all the time with the assur-

ance that if it hurts more than they want to stand, I will quit and make another application. In this case it did not work, however, and I give him the alternative of having the tooth extracted or let me clean it out a little. With much fear and trembling he lets me go ahead and I soon have it in shape that I can soothe the pain and promise to make an application the next day that will finally devitalize it.

At eleven o'clock the carrier hands in a box which on opening I find contains a broken rubber plate, sent in to be repaired and returned by first mail, sure.

The plate is a partial lower and has a familiar look as I have repaired it three times before, each time with the assurance that it would be of no use, as the mouth had changed so much since the plate was made that it was no longer a fit. Having given the best advice I could, I shall continue to repair the old plate as long as wanted. Why is it that people who must have three new bonnets a year and new dresses as often as the fashion changes, will continue to wear an old plate for years after it should be laid aside?

While preparing the plate for flasking there comes in a young lady who complains that while eating pop-corn she got a piece in one of her teeth that set it to jumping, and she wants the tooth out. She is rather a good looking young lady of 18 or 20—well dressed and intelligent.

I ask her to take the chair, and while washing my hands to wait on her, visions float through my head of how I will put some of the theory we learn at dental societies into practice, and if I can ease the pain will try and save the tooth. I look into the mouth and find the molars and bicuspid so badly broken down that I at once conclude that in this case at least salvation will not be free. On remarking on the condition of her teeth I am told that so long as the back teeth do not ache she will let them alone until the front ones commence to decay and then have them all out.. Becoming convinced that it is a "condition and not a theory that confronts us" I turn my attention to the tooth causing the present trouble. The one pointed out is the right superior first molar. A glance shows it to be a dead tooth, as we in common parlance say, and consequently not the one with the "jumping" act, while the second molar has a large crown cavity in just the condition to take in a kernel of corn and start trouble.

I try to suggest that it is the second molar that needs to come

out this time, but am given to understand that she knows which tooth aches and what she wants, so I reach for the first molar and drop it into the spittoon. The missionary spirit having now departed I hand her a glass of cold water and tell her to rinse where the tooth came out, and am not surprised when she exclaims that the water makes it ache as badly as ever. I mildly suggest that we now take the tooth out that had been troubling her, and she says "take it out then" so the second molar followed the first and I send her away that much nearer the time when "store" teeth will take the place of what nature intended to be a well developed, regular and beautiful set of teeth.

My next appointment is for two approximal cavities in central incisors, left central overlapping the right and at point of contact the decay. Teeth have been separated with rubber and held steady for four days with white gutta-percha.

Teeth good structure and decay dark in color. On removing the gutta-percha and applying dam, I find cavities so near the cutting edge that at first it seems a question whether it may not be necessary to cut off the corner of a left central. A rather small round bur enters the cavity and takes out most of the decay. I find it does not undermine the enamel toward the cutting edge and so decide it is safe to leave the corner. I now have cavities that by taking a little larger round bur and going to the bottom of decay, a size larger and beveling the edge, an inverted cone and making slight undercut, I can fill by hand-pressure and complete the operation easily in twenty-five minutes from the time of putting on the dam. But will that be the best way? I see two good reasons why it will not. First, when the teeth resume their natural position the fillings will be in sight just enough to show that there is something between the teeth, but not enough to show what it is. I do not like that. If I can keep fillings entirely out of sight, well and good; but if they must show just a little, I want them to show a nicely-rounded gold filling.

The other question is not one of æsthetics, but of durability. If I fill cavities the easy way the decay will be removed and I think a perfect filling made. As the teeth come together the gold will be in contact, but it will bring the cervical margin of the fillings just above the point of contact, the most vulnerable point on approximal walls. By cutting freely toward the neck of tooth I can soon reach a point where the fillings will be a sufficient distance apart to be easily

kept clean. This I do, and making a little undercut all round, but no retaining points, so-called. I start the fillings with Steurer's plastic gold and finish with cohesive gold No. 4, using Varney points, principally the bayonet shape in this case, and light, but rapid blows with hand mallet. I burnish hard, give a rough polish with disks on engine and finish with fine tape.

I now have a little time to give to what to me is the most difficult part of dentistry—the making of satisfactory joints with gum teeth. Am getting along nicely with this case, however, when there comes in a big burly granger with a determined expression on his face, and I know at once that there is another tooth to be “pulled.” I can also see that the granger aforesaid does not carry the tooth, but the little woman with him. He follows me into the laboratory to say that it is a bad tooth and he does not want me to break it off or hurt more than is necessary. I thank him for mentioning it with the remark that if a person does not speak about it we always try to hurt all we can. He gives me a look as if he thought I was a little sarcastic, and went on to say that the dentist who took out the mate to this tooth had hurt a good deal more than necessary and then broke it off, and he did not like that kind of business.

I found the right lower first molar to be the one troubling. Taking my Harris' forceps for that side I pushed down with a steady pressure until I knew the points would rest in the bifurcation of roots, and on putting on a little force felt it start, but the roots being wide-spread would not come up, and the anterior root broke, leaving about half of it in the process. The man bossing the job says “there you have done it,” and I could only mildly remark that I guessed I had and asked if he could tell me how not to break roots of teeth. “Well, he should think a dentist could take out teeth without breaking them.” I promised to look the matter up and if there are any here who do not break them please tell me the secret of your success.

It is now getting late in the day and the dental horizon a little cloudy, but the next caller brightens things up by stating that *she* had come to pay her bill and tell me how comfortable her teeth were since they were filled. That she was well satisfied and the bill not so much as she had expected. That part I could have remedied had I known.

The last regular appointment is with a boy of eleven, who, a few

days before had been brought in to have one of his temporary teeth extracted. It had been paining him but was not loose, his mother said. As most of those cases do, it proved to be a first tooth, but the first of the permanent set instead of one of the temporary.

After having this explained to her, the mother was very anxious that the tooth should be filled, and it then became necessary to convince her that it should be out. The question of what to do with the sixth year molar has been a prolific one for discussion in society meetings, but I take it that few will object to the rule that these teeth should be removed if they are so badly decayed at the age of ten or eleven that devitalization is necessary.

After we were through talking about the molar I called the mother's attention to the condition of the boy's superior incisors in which were four good sized cavities of soft white decay, and was met with the usual question of "what makes teeth decay so any way." That is a hard one for the non-professional, but of course easy for the dentist. All you have to say is that there are present in the mouth the germs of a low order of vegetable life, that if any particles of sugar or starch are allowed to remain on or between the teeth those micro-organisms will commence to feed on them, converting the same into lactic or some other acid, and that the acid causes the decay. You can give this theory, or, if you wish, look back a little in your file of journals and find a number of others.

But after you have given all the theories of decay that are based on external causes, have you given the true one? or at least the one the mother should know. I do not think you have. I sum up the whole matter and say to the mother that the "why" of her boy's teeth decaying is that he has not used them, and they have not been built strong enough to withstand decaying influences that must necessarily exist in any mouth.

Scientists with the wonderfully improved appliances at their command are enabled to discover great numbers of micro-organisms, some of which, being always present where decay exists, it is natural to presume have something to do with causing the decay. What has been called the germ theory of decay is being developed into a very plausible theory, and yet while new discoveries are being made I do not presume that any new condition of things exists, but that so long as man has lived in the world the same number and kinds of micro-organisms have found a lodging place in

the mouth. I also assume that the master mind who created man knew of the condition that would exist and made the teeth strong enough to withstand the destroying influences of the lower order of life which He for some wise purpose placed in the mouth. My position then is, that if the teeth are built up as they should be they would not decay; and the reason they are not so built is that they are not called on to perform the functions nature intended. Take the boy in question, he is an only child, the pet of the family and is not in the habit of masticating anything harder than a chocolate caramel. Being a boy the boy nature in him will assert itself although the mother does not propose to let her boy go near the water until he has learned to swim. He takes a vigorous part in all boyish games and is developing a strong body with the exception of the teeth and muscles of mastication. For when it comes time to exercise them he is given a cup of coffee in which to soak all food that has not been already cooked so soft that it can at once be passed into the stomach. And if the meat is not so tender as to be prepared for deglutition without some little work on the part of the organs of mastication, the butcher receives a blessing and the cook is instructed to take the platter and prepare hash for the next meal.

A few years ago we were going to build up and harden the teeth by giving the syrup of lacto-phosphate of lime in teaspoonful doses. I do not think we are building teeth that way now. All the elements that go to build up the body are abundantly contained in the food we eat, and if the digestive organs are anywhere near healthy, they will be passed along in the blood in just the right condition to be appropriated. If the active organs of the body are to be made strong and vigorous they must be made to feel the need of appropriating to their use largely of the material as it passes, by exercise.

I step into a blacksmith's shop and find the smith swinging from morning till night a hammer that would tire me to strike ten blows with. The blacksmith eats of the same kind of food as I, and probably about the same quantity, and the only reason why the biceps of his arm is so much better developed than my own is that he uses it more. What exercise will do for the mechanic's right arm it will do for any part of the body, the teeth not excepted.

Whatever effect the foregoing lecture may have on posterity it will not help this boy's incisors. With the dam in place I carefully

prepare the cavities, filling some with white gutta-percha and the others with the oxyphosphate of zinc, then dismiss him with the instruction that these must be looked at once a year regularly if he expects to keep them.

Having taken more of your time than I had intended, I will not follow the day to its close, the other business consisting of some more extracting, treating teeth, etc., little things that must be done some time and that I try to bring in late in the day so as to interfere with regular appointments as little as possible.

At 5:15 I have finished a fairly busy day. Have a set of teeth waxed up and flaked, repair job ready for mailing and as I turn the key, feeling that I can dismiss all thoughts of business until eight o'clock the next morning, I do not regret that I chose the profession of dentistry.

GOLD CROWNS AND BRIDGE WORK.*

BY B. OSCAR DOYLE, D. D. S., LOUISVILLE, KY.

Since our last meeting another year has been added to the past, and as we come together in this our annual meeting we have much to be thankful for. Our ranks are unbroken, and the experience, trials and and misgivings of the past year have been added to the account which can never be changed, but the record is only valuable as it serves to steer us clear of mistake and error in the future. So far as I am individually concerned, while I feel that it is a duty incumbent on each and every member of our Association to do whatever is in his power for the advancement of our chosen profession, and especially for the furtherance of the interests of this Association, yet, it seems no more than right and proper that those of us who have borne the heat and labor of the day as it were, in the upbuilding and care and worry necessary to the progress and advancement of this Association, should allow the mantle to fall on other and younger shoulders. Young men—the work is before you—will you take it?

After an experience covering more than a quarter of a century in the study and practice of dentistry I have arrived at a time when it is just as necessary to be a "hustler" and be up and doing, or be left behind, in the great march of advancement, which marks this era of our profession.

*Read before the Kentucky State Dental Association.

At a preliminary meeting, called by our executive committee early this spring, which I was prevented attending by an attack of "the grippe" I was pledged by one of my friends for a paper on some subject, and in fulfillment of that pledge I am here. Probably some of you have never written a paper for this Association; if so, you will appreciate the situation, in preparing a paper "some subject" pertaining to dentistry—the field is broad enough to cause a whirl of excitement in trying to make a selection, and yet I feel that you do not want finely spun theories, but rather something practical, something that may be of value in the ordinary every day experience of practice.

With this idea in view, I will call your attention to a few thoughts in relation to the preparation of roots for Gold Crowns and Bridge Work, and a novel way of attaching these appliances.

I have had considerable experience in the making and attaching of these, and will first speak of the failures I have noticed, which have been chiefly on account of improperly prepared roots, and in many cases a failure of the material with which they were attached; failure is always a very valuable lesson in achieving success, if the causes thereof are properly studied. Such causes are to be avoided in the future in the preparation of any root for the reception of a gold cap or gold crown, it is always presumed that the root has been properly treated and filled, it should then be brought into proper shape, so as to resist the very great strain to which it will ordinarily be subjected in process of mastication.

My method of procedure is as follows: After all the carious matter has been removed the nerve cavities are filled with cone-shaped silver wire cones which project above the gum line to any required length. The silver wire cones are first amalgamated or covered with a thin coating of soft amalgam and are barbed if need be, and driven in place by a few light taps of the mallet, after which amalgam is packed around them until the root is restored to such contour as may be desired. After the amalgam has consolidated, say at another sitting, any further alterations of the shape of the root may be attended to. I have always found a root built up straight or very slightly cone-shaped, the best form. Now, as you all know, there are very many devices for getting the measurement of the root for making the gold collar which fits at and under the gum. I have tried them all, and I now do no fitting of gold bands in the mouth, but rely wholly on a metal cast, an impression of the

root or roots, prepared as just described, is taken in modeling compound which is thoroughly chilled before removal from the mouth, an articulation is taken with wax, a plaster model is made from the impression, the cast is trimmed away at the cervical border to allow the gold band to pass under the free edge of the gum and up to the alveolar border. A metal cast is then made of fusible alloy by first imbedding the plaster cast in the fused alloy, after removal of plaster model a metal die is made by pouring into the counter model, in this way you have a fac-simile of the plaster cast in metal, to which the gold plate, which is to be used in construction of the crown, can be applied, the metal cast and wax articulation is now placed in an articulator, and you can proceed just as well as if the patient was present.

If the crown is carefully made no alteration will be necessary and it is ready to be applied to the root. I have on several occasions made bridge pieces by this method, which were never tried in until completed. On one occasion, a gentleman of this city while away on a business trip, was troubled with an aching second molar. In an attempt to have it extracted, it was broken off even with the process, and the pulp left exposed. He immediately returned to the city, and we treated the root, built it up, as I have described, and placed a gold crown in position, which has given perfect satisfaction.

For several years I was much troubled with the disintegration of the various phosphatic cements, which were used in the attachment of these appliances. About two years ago I was talking with my friend, Mr. T. A. Long, of Philadelphia, about cements, the uncertainty and general unreliability of them. After reflection he suggested the use of Hill's Stopping as a material for setting gold crowns and bridge pieces which would not disintegrate, nor be affected by the fluids of the mouth, the only trouble was the great heat required. It was a happy thought—I acted on the suggestion, and have never had a failure where it was used. My method of using it is: first have the root *thoroughly dry*, and coat with a thin solution of Hill's Stopping in chloroform, dry with hot air, warm the crown with a sufficient amount of the Stopping inside to proper consistency, and then place in position *rapidly* with hand pressure. An opening should be made in the crown for escape of excess material. When the crown is in position chill thoroughly with ice water, after which fill the opening in the crown with gold wire, or foil.

My first use of this material, was in setting a bridge of eight teeth. Patient returned in a few months with one of the porcelain fronts on a bicuspid broken. I tried in vain to remove the appliance, used chloroform, hot air, hot forceps, hot water, and every device I could think of, but to no purpose, it could not be moved, and as I did not want to cut the appliance to pieces, I was forced to make the repair in the mouth. This material has proven so very satisfactory in my hands that I can certainly recommend it. If in this short paper I have said anything, or advanced any idea which may be of any value to any one of you, I shall feel amply repaid. With thanks for your kind attention, I will now give way to some other member.

RUBBER DAM.*

BY LOUIS OTTOFY, D. D. S., CHICAGO.

To the casual observer it seems hardly possible that this theme has sufficient breadth and importance to be entitled to the dignity of an essay. Yet, when we remember that next to the dental engine the discovery of the rubber dam is the most valuable and important single source of the rapid progress of our profession during the last twenty-five years, we may consider the subject worthy of some consideration.

In its broader sense a study of the history of the rubber dam involves an inquiry into the methods employed for the exclusion of moisture, and a consideration of the successive evolutionary steps of the various methods from the "old timer of the forties" to the kid-gloved member of the graduating class in the nineties." Incidentally it also includes a notice of the various accessories, which the use of the rubber dam has created.

At first it seems strange that the earliest writers make no mention of the methods then in vogue for the exclusion of moisture from cavities during the operation of filling, but when it is remembered that fillings were introduced into cavities whose dryness was not considered essential, the lack of any mention of this subject does not seem so strange. During the time when various gums, lead and tin were the materials most commonly used for filling, the necessity for excluding moisture was not imperative.

The introduction of gold as a filling material at the beginning

*Read before the Chicago Dental Society November, 1890.

of this century brought with it the want of some means for the exclusion of moisture, and when in 1835 the use of gold became general; dentists saw, first the necessity of removing the moisture from the cavity itself, and second, to retain the tooth and filling dry until the latter is completed. It is about this time, therefore, that we first find mention of the wiping out of cavities with locks of cotton, strips or pellets of linen or cotton cloth and dried or prepared flax. Many operators, even as late as 1850, did not consider moisture any detriment to a filling; and fillings at that time were inserted by excluding the saliva by mere pressure of the thumb and forefinger around the tooth. Many, however, used the napkin, which even to-day in many cases admirably answers the purpose. This was undoubtedly the first appliance used for excluding moisture. The next suggestions were those of tissue and bibulous paper. The first attempt at anything like a dam was on the principle employed by engineers and known as a coffer-dam, consisting in the building up of some kind of a coffer or box around masonry or wood work thus forming a dam and excluding the moisture.

Dr. J. B. Rich, in an article published in 1878, claims to have used coffer-dams made of gold plate in 1836, the appliance consisting of gold bands fitting around the neck of the tooth to be filled, and thus virtually forming a matrix around the cervical border, the further exclusion of moisture being accomplished by the methods hereintofore mentioned. In 1850, Dr. Wm. H. Dwinelle resorted to a coffer-dam made of wax; this consisted of building up wax around a tooth and cavity, an operation fraught with considerable difficulty and requiring some skill to be properly accomplished.

The channel within which experiments about this time seemed to be directed, had its outlet some means whereby the saliva would rather be removed from the mouth as it flows into it, than to attempt to keep it from the tooth. Attempts were also made to suppress the flow by means of compressors applied to the ducts, and in these experiments we have the prototype of the multitude of saliva ejectors, duct compressors, saliva collectors and pumps.

About 1864 the rubber dam commenced to become generally used.*

Occasionally there was still some mention of the old style cof-

*All reference to the discovery of the rubber dam, is at this time, purposely omitted.

fer-dam. Dr. G. A. Mills, in 1863, describes one made of plaster of Paris, but gradually the rubber dam was gaining in favor, especially as it was manufactured in a more suitable form for the use of dentists, and it is safe to say that since 1867 the use of the rubber dam has been general. In its trail there followed an avalanche of inventions accessory to the use of the dam; but saliva ejectors, pumps, collectors and bibs were continued in use by many. For the attachment of the dam around the necks of the teeth there came into use wedges, thread and silk ligatures, white and colored, plain and waxed, rubber tubing, silver wire, gilling twine, cotton, punk and bibulous paper, alone or moistened in sandarac varnish or chlora-percha, and finally an endless variety of clamps; about 200 different kinds are now on the market. The rubber dam itself called forth holders and buckles to retain it in position, while for punching the holes for the teeth, several devices were introduced. For the application of the ligatures we have the rubber dam applier, for their removal the ligature cutter and for holding the dam out of the way we have depressors and weights made of brass, nickel-plated, attached with string, braid, chain or spring clip. To the endless variety of clamps were attached various kinds of accessories, such as reflectors, tongue-depressors and tongue-guards; of course the forceps for their application was also introduced. Then came the "rubber dam screw clamp," the "root clamp," the "cervix clamp," the "lever clamp," the "H. C.," the "festooned," the "broad flange," the "beaked molars," the "dens sap," the "reach arounds," the "hinged and jointed," the "universal" and what-nots. There are several score in the market which are known by the names of the inventors. For the application of some of them a special pair of forceps is necessary.

It has been my intention to describe to you the process of the manufacture of rubber dam, but I soon discovered that this matter was something of a secret with different manufacturers; from one manufacturer I received the following:

"We would like to accommodate you in furnishing you with what information we can; to go into detail of the manufacture of the rubber dam for dentist's use, which is a very particular subject, and as every rubber factory have different ways for manipulating it which are more or less secrets of the superintendent, we could not in justice write up an article giving the exact manufacture for rubber dam. We will say that we make it of the very best quality of Para rub-

ber, with sulphur enough to vulcanize it, and no other composition is used in our manufacture of rubber dam."

Another says :

"We cannot tell you the composition of rubber dam, nor the method of manufacture, nor the quantity used by dentists. We know nothing whatever on the first two points.

Rubber dam is made by various manufacturers and sold through a multiplicity of channels. We could not even make a guess as to the quantity sold.

As to the differences in quality, they depend doubtless upon quality of rubber, composition and methods of manufacture.

The difference in result as manifested in practice you know probably as much about as we do.

The following is another: "Our specialty in rubber dam is the twilled dam, it is the only thing we handle. This dam was first manufactured about six years ago. We believe this is the only dam of its kind on the market, and owing to its mode of manufacture we consider it the best. It is the only water-cured sheet used for that purpose. It is made of pure rubber, there being no compound except a little sulphur which has to be used in curing, about 90 per cent of which is taken out in the process of washing the sheet when cured.

I have also received the following: "There are about half a dozen manufacturers of rubber dam in this country.

"I have four thicknesses of rubber dam made, which I think embrace the extreme thicknesses that could be used in dentistry."

"The quality of the rubber dam is determined by the length of time it will retain its elasticity, and that of course takes time.

"A good quality is obtained by using the very best Para gum and great care in the manufacturing and vulcanizing. For the Davidson rubber dam, which I keep for sale, the very best part of their Para gum is selected and put aside for the purpose of making rubber dam and the other is used for coarser work. Inferior gum can be used for a month or two and feel and look as well, but it will soon begin to lose its vitality and become rotten.

"The best way to keep rubber dam is in tin boxes in a drawer away from the heat. Exposure to the sun or artificial heat will injure it and soon cause it to harden. It is also bad for the gum to hang it up in the light with the air blowing through it for any length of time.

"About the quantity used by dentists I am not in a position to give you any information."

So much for the manner of its manufacture.

"Napkins, bibulous paper, absorbent cotton, etc., have their place and are useful adjuncts, but for extensive operations they cannot compare in utility with a dam which hugs the tooth so closely that no moisture can enter the cavity. The two essentials to this end are great strength and almost unlimited elasticity. A dam that tears when it is stretched over the tooth had better be thrown away at once, or the operator will probably have cause for regret in the failure of the filling."

The rubber dam, as it comes to us from the manufacturer, is either in large pieces, varying in width from $26\frac{1}{4}$ to 35 inches, and in almost any desired length. More recently it is also put up in boxes.

"A yard of 35-inch dam cut into pieces $6 \times 4\frac{3}{8}$ inches, and put up in boxes with sheets of blotter between—48 pieces to the box. The size is handy—about right for most operations—and the dentist is saved the time and bother of cutting, while this dam keeps its condition better than when exposed to the air."

It is also put up in a form which I consider the most convenient, most economical and best for the durability of the dam itself.

"Everybody knows that free atmosphere and light are the worst foes of rubber dam. Given fine quality rubber dam, guard it from heat, light and air, and trouble over "rotten" rubber will be reduced to the minimum.

When sold in (almost) air-tight tin cans, the dentist has a perfect protection against its enemies. Then, again, the form in which it is put up—a long, narrow strip or roll—saves time and rubber. A snip of the shears and just what is needed is ready for use, while the remainder goes back into its can until wanted.

Two sizes of cans are used, yard and half-yard. The yard can contains a roll seven inches wide and five yards long; the half-yard, half the length of the same width. That is, equal to a yard or a half-yard, respectively, of regular 35-inch wide rubber dam.

Some put up is only six inches wide and consequently on a yard strip has 36 square inches less of rubber than the seven-inch wide strips. There is also a method of putting up rubber dam, known as rubber dam and apron.

Rubber dam sells for \$1, \$1.50 and \$2 per yard, according to

the thickness. I do not think any manufacturers sell different grades of quality. All I ever found is said to be "the best."

Of course the width of the rubber dam may make a difference in the price, as dam is generally sold by *length* regardless of the *width*.

"For instance—Medium 35-inch wide rubber dam at \$1.50 per yard is as cheap as 26 $\frac{1}{4}$ -inch of equal quality would be at \$1.12 $\frac{1}{2}$ per yard."

Rubber dam 6 inches wide and 15 feet long, of medium thickness, costing at retail \$1.50 per yard, contains 1,080 square inches of rubber, when cut triangular (as many do cut it), it will yield 60 pieces, each 6x6x8 inches, and costing 2 $\frac{1}{2}$ cents for each piece. Cut square the same amount will yield 36 pieces, each piece costing a fraction over 4 cents. The average piece of rubber dam used will not cost over 5 cents for each piece. When put up in boxes with blotters, as above referred to, there are 48 pieces in a box of the medium thick, each piece costing a fraction less than four cents.

The object of considering this matter of cost in connection with this subject is obvious. When rubber cloth was first introduced, it was customary to save the cloth, wash it and use it again on any patient in the same way as a napkin. Although the full value was not understood, the rubber cloth was then considered one of the novelties, and not the absolute necessity of to-day, its cost when used was not calculated in dollars and cents. Since that time many have clung to the habit of washing and saving the dam; there is much to condemn in this practice and nothing to recommend. Formerly I also followed the custom from a motive of economy. The old rubber cloth was thicker and contained less rubber, held together by means of linen fibre in the form of a cloth, hence it bore washing and exposure without in any special way affecting its quality for some time. The rubber dam of to-day is an entirely different material; it loses its elasticity after frequent emersions in water, and also becomes brittle, often tearing during its application or sometimes during the operation of filling, and whenever present on the tooth is constantly a menace to the work in hand.

I trust no one is in the habit of using the same piece of rubber dam on different patients, and hence I only refer, *en passant*, to the possibility of inoculation and the transmission of disease from one patient to another. This is notoriously probable when the rubber

dam has been used in a mouth affected with pyorrhœa alveolaris; indeed it is possible to transfer the disease from one part of the mouth to another in the same person; hence it should not be used a second time in the same mouth. Of course, I understand that the rubber dam is always washed before a second using, yet we know that disease germs are subtle and some of them even microscopically undistinguishable. Furthermore, it ought not to be used a second time in the same mouth, because of the unpleasant sight of using a thing like that which does not look fresh, the dam is at best unsightly, and taking it from a book of blotters or from an envelope with the patient's name on the same, or from a row hanging on the wall with the patient's name stamped on each piece of rubber, or picking it out of the waste basket, memory and the position of the holes in the rubber acting as the guide for the identification of the rubber—neither of these methods is pleasant and should therefore not be resorted to, the cost of the rubber, as shown above, is almost nominal and the expense should be considered as much a legitimate one as the gold introduced and also as an essential accompaniment of the filling, the cost each time being from 2½ to 5 cents. Considering an extreme case in which all possible operations may be performed in one, I doubt that the expense of rubber dam could be more than \$2.00, which would represent only a comparatively small portions of the entire expense. Finally, a few words regarding the practical application of the rubber dam and its accessories in the office.

When the rubber dam, as it comes from the manufacturer, has an intense and disagreeable odor, as is sometimes the case, or is covered with soapstone, employed for the purpose of preventing it from adhering together, it should be washed in water to which a few drops of cologne have been added. Generally, I don't think this necessary. Whenever possible, cut the rubber dam from the bulk in the presence of the patient. Put up in tin cans this can conveniently be done on the bracket table. As to the size to be used, one should be governed by his own taste; many like extremely large pieces, while others, who generally place a napkin under the dam to prevent its often unpleasant contact with the lips and cheeks, can well get along with a much smaller piece. When cut square, 4x6 is the usual size; when cut triangular, 6x6x8 is generally the size required. If we look through the literature of this subject we will be led to believe that cutting the holes is an

extremely difficult operation, and the manner in which it can be performed is described in many grave and potent articles. Use a red-hot excavator, stretch the dam over the butt of an instrument and then clip it with a knife, fold the rubber and cut the holes with a pair of shears; use a hand-punch or a punch in the shape of a pair of pliers—the most convenient of them all—making the openings about one-eighth of an inch apart, in some cases somewhat less, and arrange them in the circle in which the teeth to be operated on stand. Generally three, sometimes four or five, nearly always two teeth should be passed through the dam, even if only one tooth is operated on.

Now the application of the dam to the teeth is simple and is difficult. Simple when all conditions are favorable; large mouth, flexible lips, bell-shaped teeth, not crowded and normally movable, and difficult when the opposite conditions exist, or when it is to be applied on some of the back teeth.

If the teeth over which it is to be applied are not clean, polishing them with a wheel and pumice will enable the rubber to hug the teeth and not slip off readily. To hold it in place on the tooth, use either nothing, a wedge, ligature or clamp, as the case may require. In many instances the shape of the tooth will retain the rubber, especially if the hole cut happens to be the proper size, 1-10 in diameter of the diameter of the tooth. Sometimes a wedge will serve to hold the dam above the cervical margin, sustain the tooth and if of a light colored wood makes the margins in these positions more readily visible. Ligatures of floss silk, waxed, are perhaps most often used, when used on back teeth to prevent confusion between them, a different color can be used for each tooth. with the aid of an assistant there is seldom a case where a ligature cannot be applied and retained, and it is principally in these cases where I find any need for a clamp. For this purpose a plain clamp which hugs the neck of the tooth is all that is necessary. I cannot now go into the consideration of clamps as such, or of their numerous virtues as exemplified in pushing the margin of the gum or in holding the dam tongue or check out of the way, etc.

When the dam is thus retained within the mouth on the tooth, it can be externally fastened about the head by means of holders or buckles, of which there are a number on the market, and drawn down over the lower lips by means of weights. To prevent revolving wheels from catching the dam, soap it. In case by acci-

dent the dam is pierced in the proximity of a tooth, as a general rule time is saved by applying a new piece; sometimes this can be done by applying it directly over the first piece, sometimes a plug of cotton and sandarac, or solution of gutta-percha in chloroform can be employed to seal the perforation. Whatever you fail to do, never fail to throw away the dam after using, and do it in the presence of the patient.

Dr. W. B. Ames, of this city, has suggested an ingenious use for rubber dam. There is a very thin rubber dam placed on the market having the shape of a large test tube, this is filled with soft plaster of Paris and an impression of a cleft palate can be obtained without the unpleasant annoyance accompanying the flow of soft plaster into the nasal fossa or pharynx. The samples which I am about to pass around may be retained by those who wish to use them.

NORTHERN OHIO DENTAL ASSOCIATION.

The Thirty-Second Annual Meeting will be held in Oberlin, Ohio, at Y. M. C. A. Association Building, Tuesday, May 12, 1891, at 10 o'clock a. m., and continue its session three days. A cordial invitation is extended to all members of the profession. Henry Barnes, Cor. Sec'y.; F. S. Whitslar, Pres.

Subjects for discussion: "Development of the teeth." Paper by Dr. W. H. Whitslar, Youngstown. Discussion opened by Dr. A. J. Dowds, Canton, "The Recurrence of Decay in Teeth." Paper by Dr. J. G. Templeton, Pittsburgh, Pa., and "Hind Sight." Paper by Dr. W. H. Atkinson, New York. Discussion opened by Dr. C. R. Butler, Cleveland, and Dr. E. J. Waye, Sandusky. "The Sanitary Condition of the Mouth, and how best to Maintain it." Paper by Dr. J. F. Dougherty, Canton. Discussion opened by Dr. W. T. Jackman, Cleveland, and Dr. J. H. Wible, Canton. Voluntary papers. Incidents of office practice. If you have anything new or helpful bring it with you to this meeting. Clinics: "A Tin Filling with Gold Facing." Dr. S. B. Dewey, Cleveland. "Electricity, Supplemented with a Paper." Dr. Frank Cræger, Fremont. "Melting an Ingot of Amalgam, followed by a talk on the same." Dr. J. F. Siddall, Oberlin, O.

OFFICERS 1890-91.—President, Dr. W. H. Whitslar, Youngstown; Vice President, F. H. Lyder, Akron; Secretary, Dr. F. F. Dowds, Canton; Cor. Secretary, Dr. Henry Barnes, Cleveland; Treasurer, Dr. Chas. Buffett, Cleveland.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITORS:

LOUIS OTTOFY, D. D. S.

L. L. DAVIS, D. D. S.

C. N. JOHNSON, L. D. S., D. D. S.

THE WORLD'S COLUMBIAN DENTAL MEETING.

The first circular of the executive committee of the 1893 meeting is herewith submitted as an evidence that this work has already commenced. It is our earnest wish that the heartiest co-operation of dentists will be manifested in this great undertaking, both morally and financially to the end that it shall be a pronounced success and redound to the credit of all who take part in its proceedings.

IMPORTANT TO DENTISTS.

TO THE PRACTITIONERS OF DENTISTRY THROUGHOUT THE WORLD.

The Southern and the American Dental Associations at their respective annual meetings held during the past summer, by *unanimous* vote of each body declared in favor of utilizing the great occasion of the World's Columbian Exposition, to be held in Chicago in 1893, by organizing a world's meeting of practitioners of dentistry, to be held at the same time and place, August 30, to Sept. 10th.

In pursuance of this resolution a committee of five from each body was appointed and the joint committee so created was authorized to add five more to its membership, thus constituting an Executive Committee clothed with full power to take such action as in its judgment it should deem best to carry out the objects of its organization, such action to be final and binding. This executive committee is composed as follows:

Appointed by the Southern Dental Association: L. D. Carpenter,

Atlanta, Ga.; J. Y. Crawford, Nashville, Tenn.; W. J. Barton, Paris, Tex.; J. Taft, Cincinnati, Ohio; C. S. Stockton, Newark, N. J.

Appointed by the American Dental Association: L. D. Shepard, Boston, Mass.; W. W. Walker, New York City; A. O. Hunt, Iowa City, Iowa; H. B. Noble, Washington, D. C.; Geo. W. McElhaney, Columbus, Ga.

Elected by the Joint Committee: J. C. Storey, Dallas, Texas; M. W. Foster, Baltimore, Md.; A. W. Harlan, Chicago, Ill.; J. S. Marshall, Chicago, Ill.; H. J. McKellops, St. Louis, Mo.

The Executive Committee have elected the following as its officers :

President, W. W. Walker ; Secretary, A. O. Hunt ; Treasurer, J. S. Marshall.

It has also adopted a constitution for its government, and decided upon the future organization of the following committees :

1. A Finance Committee.
2. A Programme Committee.
3. A Committee on Exhibits.
4. A Committee on Transportation.
5. A Committee on Reception.
6. A Committee on Registration.
7. A Committee on Printing.
8. A Committee on Conference with State and Local Societies.
9. A Committee on Dental Legislation in this and other Countries.
10. An Auditing Committee.
11. A Committee on Invitation.
12. A Committee on Membership.
13. A Committee on Educational and Literary Exhibit.
14. A Committee on Clinics and Operative Dentistry and Oral Surgery.
15. A Committee on Prosthetic Dentistry.

The objects had in view by the two great representative bodies authorizing and inaugurating the movement for the holding of the World's Columbian Dental Meeting are thus broadly and tersely set forth by the Executive Committee :

"The bringing together for professional, scientific and social purposes, the dentists of the United States and of all other countries."

It is the desire, as it will be the effort, of the Executive Com-

mittee to so justify the trust reposed in it, that the contemplated meeting shall prove a brilliant and long-to-be-remembered success. It stands pledged to do whatever may be in its power to make the occasion contribute notably to the elevation of the profession, to stimulate the spirit of research, to strengthen fraternal courtesy and to promote cordial co-operation among all who desire the advancement of dental science and art. The aim would be too limited if it included less than this, and the enterprise will be a failure if it fall short of a realization of this ambition.

For the accomplishment of these objects, the hearty assistance of every college faculty, of every State and local society, and of every reputable dental practitioner, is earnestly solicited.

All practicing dentists outside of the United States are cordially invited to participate in the meeting, without contributory cost; and there is reason to believe that the invitation will be accepted by large numbers of foreign dentists.

We desire and expect the presence of distinguished representative dentists from almost every civilized country, and nearly all of note in our own country, resulting in the largest gathering of dental practitioners in the history of the world.

Information as to the progress of the work will be communicated through the journals from time to time, and meanwhile every dentist is urged to do all in his power to forward the objects sought.

In behalf of the Executive Committee.

W. W. WALKER, President,

67 W. Ninth St., New York City.

ROOT FILLING IN BRITAIN.

In the December number of the *Journal of the British Dental Association*, Mr. Henry Sewill, of London, stands sponsor for an article on root filling. From a careful reading of the paper it may be seen that the distinguished author has an accurate knowledge of the principles of root filling and also of the treatment preliminary to the beginning of the operation. He dismisses the subject of using metals for sealing the apical foramina as too difficult of accomplishment first, and second, when accomplished, such fillings are not easy of removal, in case of necessity from after complications, as periostitis and abscess. The ideal root filling should be

easy of removal, and the author thinks a cotton wool filling steeped in a one per cent absolute alcoholic solution of perchloride of mercury is the best for his purpose. He desiccates the canals with the absolute alcoholic solution, then packs the root tightly with the wetted wool, and covers this with oxyphosphate cement. If the foramina are enlarged he uses oxyphosphate, mixed thin, in which a few fibers of wool are incorporated, and pushes this to the apex, or a little gutta-percha is rolled thin, softened with chloroform and carried to the apex. He believes that the foramina need not be closed with such a filling, after freshly extracting the pulp and treating the root with perchloride solution, nor even after the healing of an abscess. The moistened wool, he thinks, will prove a safeguard for future freedom from elongation, tenderness to pressure, etc. The singular statement is made that gutta-percha is more liable to decomposition when covered by a filling (of metal), than when moistened by the saliva.

The author of this very thoughtful paper disbelieves in removing or boring out sound root canals except for the purpose of gaining free access to them. In this we heartily agree with him. Immediate root filling, save in cases of recent pulp extraction, does not receive his commendation, the author thinking doubtless that it were better practice to treat diseased tracts or abscesses before the permanent closure of the canal. We agree with him in this also. The opinion expressed that a few months, or a year or two, is a sufficient time test of the permanence of root-filling does not meet with our views—the time is too short. If an abscess is established within five years we would consider the operation a failure, as it would involve the removal of the crown filling and the refilling of the root. The very excellent suggestion of the complete removal of the whole pulp or the removal of all fragments before the operation of root filling is attempted, meets with our heartiest approval. Nothing—not even complete sterilization at the time of root filling—will preserve these fragments from future destruction; because the apex of a root cannot be filled or closed with a fragment of the pulp in it. Its destruction is only a question of time, no matter what antiseptic be used. With all due deference to the author of this lengthy article, conceding his paper to be well written and granting its intrinsic merits as a logical production from the personal equation standpoint, it will not bear the test of crucial practice in the whirligig of time; even perchloride of mercury is evanescent

in such situations ; and if by chance any albuminous matters were coagulated by the combined influences of the alcohol and the perchloride, such is fittest food for anærobic microbes from within, or if the filling in the crown should leak, the aerobics from without would soon destroy this structure reared on a foundation of sand. Cotton should not be used as a root filling under any circumstances when permanence is the object sought to be attained.

A DANGER SIGNAL.

The DENTAL REVIEW is not an alarmist. From its inception its policy has been to quietly and consistently place before its readers whatever it found of interest to the profession, and it has always sought to avoid sensationalism of any nature. It does not aim to create a sensation now, but it cannot help feeling, in common with many reflective members of the profession, that within the next two years we are to face a danger which is not in any sense an imaginary one.

The probabilities are that unless a constant and aggressive sentiment is brought to bear in the right direction the profession is to be burdened by the influx of a lot of incompetent men when the colleges shall have dealt out their diplomas at the end of the present session and the one to follow.

The peculiar condition of affairs leading to this danger is incident on the change made by the National Association of Dental Faculties from a two to a three year course. The moment this announcement was made a general stampede followed of all sorts and conditions of applicants for matriculation, and the lamentable weakness of our matriculation methods resulted in a wholesale admission of men, good, bad, and worse than bad. Some of the colleges may have placed a feeble barrier at their gates in the way of a half-hearted examination ; but the depravity of the whole system lies in the fact that even were a candidate refused admission at one college he could go to a neighboring institution and be received with open arms. It is doubtful if there has been a single applicant however ignorant or awkward, however uncouth or unkempt, however degraded or depraved, but who, if he has had the self-assurance to apply, has succeeded in getting into one or another of the rank and file of our colleges. And this glaring evil will continue to exist till we have a uniform standard of admission for all the col-

leges. Humanity is proverbially weak when it comes to self interest and aggrandizement, and we are putting it gently when we intimate that the managers of dental colleges are only a part of humanity. Some of them probably have the inclination to do what is right, but most of them evidently lack the courage to stand out boldly against the competition of the less scrupulous brothers.

But we had not intended touching at length upon the question of matriculation in this instance. The matter of a higher standard of matriculation has been made one of the planks in the platform of the DENTAL REVIEW for the coming year, and at the proper time it shall receive consideration. We will content ourselves for the present by merely hinting to the National Association of Dental Faculties, that unless at their next meeting they take some steps looking toward a reform in this matter they may expect from us some rather candid compliments.

The point we are making here is that our colleges are filled to-day with students many of whom will disgrace dentistry if allowed to graduate after a studentship of only two years. They lack the mental and physical ability to properly prepare themselves to practice in that time. Some of them never will grace the profession, no matter how much time they spend in study, and pity 'tis they ever were allowed to enter. But there are others who by persistent effort could make passable practitioners in three years, when if graduated at the end of two would forever remain a drag on the profession. It is for this class of men we are pleading and we ask the colleges not to graduate them because we honestly believe that the one most wronged in the transaction is the man who receives a diploma before being qualified for it. He is handicapped for life, for usually he is not made of stuff stern enough to enable him to work out his own salvation after he has left college. The common rule with a man of this caliber is that the moment the spur is removed he settles down into a slow, easy-going gait which gradually shows less and less endeavor till at last a full stop is made and a retrograde movement begins.

The three year course instituted by our colleges promises much for such men as these, but the present danger lies in the fact that so many of them are likely to slip through half-fledged before this law comes in force. Let our colleges discriminate carefully in the examinations of the next two years, as we are earnestly of the opinion that there is more at stake for or against the profession than would

appear on the surface. We believe our colleges contain a greater number of men to-day who are lacking in the elements of a true professional spirit than they ever contained before; and we are led to this belief by noting the mad rush to get in before the two-year course expired. It shows, in some measure at least, a demand for diplomas predominant over a desire for knowledge; and while we are far from impugning the motives of any student or class of students, yet we cannot forbear calling on our colleges to do their duty.

If a man is competent—by all means graduate him; if he is not—stop him.

C. N. J.

TOO MUCH MATTER.

For the past few months we have been so much pressed for space that we could not print a journal large enough to contain the whole of the interesting matter that our friends have favored us with. We hope soon to begin the usual publication of the proceedings of the Chicago and other dental societies, and a mass of original matter already accumulated, including the final portion of the productions of "Vesuvian."

COPPER AMALGAM AGAIN.

The furor or craze, to use a common expression, which led to a somewhat extensive use of copper amalgam during the last three or four years, has been sufficiently extensive and general, to now present some opportunities for observation.

In the first place, all attempts to place it in the bicuspid—at any rate the first bicuspid, should as a rule be discouraged. Its happy hunting ground should be confined pretty generally to the molars.

In the second place, those who expect much edge-strength will find themselves disappointed, for copper amalgam will crumble unless there is plenty of wall to hold it and give it support.

In the third place, the claim that it works as well under moisture as when dry is a myth; it is much more liable to crumble if worked sub-marine, than when dry; still it is true that moisture is less detrimental to it than it is to other amalgams. It is this possibility of working it under moisture which entitles it to consideration in the filling of the buccal cavities in second and third molars.

We fear that the attempt to produce "better" copper amalgams, has only resulted in the production of a material which may be purer, but is not as good a filling material.

The earlier preparations, when set after a few weeks, would become black (perfectly black, not dark brown) and shiny, having a glazed gloss not dissimilar to the gloss left by borax on soldered surfaces. This kind of amalgam we have found to surpass in saving qualities the preparations of to-day. In filling cavities with copper amalgam, in addition to so much that has been said and written, it may be stated that it is inadvisable to polish a filling after it has set; the filling should be burnished or otherwise made smooth at the same sitting when it is introduced—unlike other amalgams. These amalgams should not be worked as dry as other amalgams; it requires in proportion much more mercury to have an even consistency and to have them retain the necessary homogeneity so as not to crumble. An important point, also, is to make the filling concave; hollow out the center of all fillings, but rub them up flush to the margin. Use it for children, be careful with young ladies, and do not bring it too near the front of the mouth, while it may not discolor tooth substance—a claim by no means substantiated—it does show through thin enamel.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

To the Editor of The Dental Review :

DEAR SIR—So far climatic changes are in the lead and swollen faces are frequent; 40° of fluctuation in fourteen hours has a marked influence on pulpless teeth and anæmic bodies. Yes, but why all this disordered condition of the human mouth? Is not dental practice a science? Have we not some fixed knowledge? We think we see evidence of a better expression of *advanced* practice; yes, that is the word. Plenty of room for improvement. Any observing reader of our journals cannot fail to notice a better tone. Many things indicate energy and ambition, both among the managers of our journals and those who contribute for their pages. Something is missing in the man that does not find himself edified by our literature. Societies are furnishing much of profit in all directions: certainly a healthier sign of the times. We think there is progress

all along the line. Thirty years enjoyed in active co-operation among the brightest members of our calling in and about New York, puts us in possession of large observation. Really the tidal wave of the last twenty-five years commenced with Dr. Atkinson's advent in New York. Since that time what a Mecca the doctor's office has been! We have here met the brilliant members of our profession from all parts of the civilized world. Not a prominent foreign dentist, from Dr. Evans through the list, but what has paid his respects to the doctor whose hospitality is unbounded. Many reminiscences associated with this experience make a pleasant history. The doctor is seventy-six years old the 23d day of January, 1891. I think it would be a pretty compliment to send him congratulations on his birthday. Many will be pleased to know that he is active all hours a day, full of untiring devotion to the inspiring thought of his life—the elevation of his calling, that it may be placed upon a scientific basis. We will never have another individuality like his.

Three representative men of their respective professions will long be remembered—Beecher, Greely and Atkinson—all of them nature's philanthropists.

The monthly clinic of the First District Society was held the first Tuesday in December; eighty-three were present. We have often seen from one hundred and fifty to one hundred and eighty. There seems a good purpose with the committee, but a slight lack of the former grip. All men owe it to mankind to cultivate themselves during their waiting hours.

When the call of duty comes, they will then be in possession of "stored radiance," and their potency will be increased day by day, instead of decreased. If we can but realize that progress can go on only by obedience to law (which governs all work) it will make life easier.

The call is for all the sunshine of the satellites rather than an overshadowing. "Cast up the highways, gather up the stones." Make life better for those who will come after. No corner in our calling only "Blue Blossom." The Patriarchs are coming, "dinna ye hear?" Kingsley is the artist. He is going to have 'em all on a bust, and send them home early. About thirty Patriarchs have been discovered. "Early to bed" makes a man healthy, which insures him against microbes. See Fillebrown; his trumpet has given a certain sound and the mourners go about the streets,

always a funeral where there is death. Moral:—Keep active in some department of usefulness that we may be best fitted for work. We here give one example worthy of being followed.

At the clinic above referred to, Dr. W. Ford, of New York City, gave a fine exhibition of electrical appliances. Dr. E. T. Starr, of Philadelphia, presented new burs for the electric engine, designed for cutting by end pressure, instead of lateral.

Dr. Jackson, of New York City, exhibited his delicate wire fixtures for regulating as applied to a practical case. Dr. W. W. Walker, New York City, demonstrated the use of the ingenious plies for tapering and threading gold wire, an invention of Dr. J. J. R. Patrick. Dr. Watkins, Montclair, New Jersey, presented a new dental record of Jeffersonian simplicity. Dr. S. S. McNaughton, of this city, exhibited a very convenient form of rubber-dam holder. Dr. Geo. S. Allan, the *champion* advocate of "*contour fillings* versus face fillings," was announced for a demonstration, using an electric motor and mallet. He was obliged to defer his exhibit for one month; cause, lack of electric power. The results will be awaited with great anxiety and extras will be published the same day.

At the meeting of the 1st District Society, Dr. Stowell gave an exhibition of his "Simplicity Tooth Crown," illustrated by charts and blackboard drawings. The doctor proved himself worthy of good attention, which he certainly had from seventy or more eager listeners. His crown is an all porcelain one, fitted with flat joints, both of crown and root, with Howe posts screwed in of platinum and iridium, cutting a groove just inside of the root edge, filling this with copper amalgam, then placing on the crown with strong pressure, thus squeezing the metal paste not only into the groove but forming a perfect fitting joint. Then after detaching the crown, phosphate cement is applied in the holes made to receive the posts in the crown, then replace the crown with firm pressure, thus completing a simple, durable, artistic operation. The doctor plainly described in a lucid manner the marked differences and advantages over the other form of crowns we are familiar with.

After this followed a lively discussion, opened by Dr. Norman W. Kingsley. The doctor, after posing in one of his statuesque figures which he alone can exhibit, drawing all eyes upon him in eager anticipation of something out of the usual order, said: "Well! Dr. Stowell, after all his beautiful demonstrations has shown to us a rediscovery of Adam and Eve." He then dropped back into

ancient history to describe the methods of setting crowns in the antedeluvian period, of which he is now known as the "Patriarch's chef."

Dr. Parmly Brown, a young and enthusiastic practitioner, late of Flushing, L. I., now of Fifth Avenue, with the finest location in the world, praised Dr. Stowell as an artist, as an enthusiast, as a gentleman and as a success; but he took exceptions to his criticisms on the weakness of the metal-pin tooth. He characterized all men who resorted to low aims and cheap trash in the mouth as quacks, "cheap Johns" and asses. Of course this was only figuratively spoken, it being his style. At our elbow we heard the remark, "Why does Dr. Brown exhibit himself so disagreeably. He is so smart with his fingers that he does not need the association of so much coarseness."

Dr. Ottolengui and others asked some questions in order to have a fuller description of Dr. Stowell's crown, which added to the general interest. Dr. Stowell certainly made a very excellent impression, and a hearty vote of thanks was extended to him. This method of crown-setting, as illustrated by Dr. Stowell, will attract a good deal of attention among those who are capable of appreciating a decidedly more artistic and safe crown than any one (where indicated) yet displayed. We suggested to Dr. Kingsley that the conditions of the later rediscovery were presented in a very much improved state (for he had laid great stress on the old method of pivot tooth-setting and characterized the new method as only a rediscovery). This crown of Dr. Stowell's is in full dress, and meets the necessities involved in its use. The old discovery found the subjects naked and exposed to great weaknesses, and had glaring defects which resulted in "the devil to pay" and the "raising of Cain."

The bi-monthly meeting of the New Jersey boys, was held Monday evening, December 15. Fifty-five sat down at a first-class dinner for \$1, which excelled anything they had had. This may have been partly due to the presence of Senator Leming, M. D., who was the honored guest of the society.

A presentation of resolutions, as an expression of their appreciation for services rendered in the legislature, thereby securing the passage of the dental law, which requires an examination before the State Board, regardless of diplomas, was made by the society to the Honorable Senator. The senator replied in an exceedingly

neat speech delivered in a genial manner, advocating the value of the law in regard to the examination of dentists, all of which was vigorously applauded by the Jersey boys. A number of visitors, consisting of Drs. Atkinson, Clowes, Patriarch Kingsley, Walker, Hart, Ottolengui and Mills, were present.

The subject for the evening, "Ethical Environments of the Dental Surgeon," was presented by Dr. Westlake, of Elizabeth, N. J., who is one of the youngest members. He has the finest cut features we have seen of late, "parts his hair in the middle," but does not say, "*ither*." Certainly as evinced in his entire bearing, he is a promising member. It is emphasized how the Jersey boys are coming to the front. The Eastern editor of the *Archives* opened the discussion based upon an abstract of the paper which he had reviewed previously, in his usual energetic oratory. This was followed by remarks from Drs. Osmun, Brown, Watkins, Ottolengui and Atkinson. As the time was limited, the discussion was not prolonged, although it was a subject of great suggestiveness to every practitioner. The main drift of the paper seemed directed to the point of censure toward the physicians because of unfraternal association in the counsel of cases. The writer gave instances of his own experience in this direction yet he did not claim that it was universally the rule. Most of the Jersey boys seem disposed to strongly defend the medical brotherhood against any imputation of unfraternal manifestations toward them in *Newark*. It may not be amiss to state that a reporter of one of the leading city papers was present, which perhaps accounts for the moderation of the remarks. It is doubtless true in New Jersey, as in every large city, that there is a great lack of recognition on the part of physicians as to the value of counsel, from dentists, in their dealings with dental cases. There are exceptional cases, for there has been a favorable change during twenty-five years. The time will come when great gains in this direction will be made, and nothing that dentists can do will facilitate the hastening of that time so much as the demonstration of the virtue of an intelligent practice according to the standard of to-day. One thing is certain, physicians do come into contact with a great deal that proves the inefficiency, or the lack of moral obligation of practitioners who hold a first-class reputation with the public. The public are in need of the services which they fail to get at the hands of those practitioners; being thus deprived, diseased conditions of the mouth are aggravated by this neglect, too often

causing serious suffering, therefore they appeal to the physicians for relief. These exhibits caused by neglect of the dentists reveal to the medical man what they stigmatize and consider beneath their notice. Such experiences are far too frequent.

The next meeting of the Jersey Society will be held the Second Monday evening of February. It is to be the annual meeting. It was said by the President that there would be no literary lay-out, but lots of fun. He gave a very cordial invitation to any and all to attend.

Dinner hour, 6:30; tickets, one dollar.

Dr. Watkins, of Montclair, N. J., a rapidly growing member, with eyes wide open, attended the great union meeting lately held at the Hub. The paper which impressed him at this meeting, was by Dr. Cooke on "Foreign Growths in the Dental Pulp." The Doctor had examined over five thousand teeth and had found a large percentage of them with these growths in the pulp chamber. Dr. Watkins said, since his return he had come in contact with a large number of cases that troubled him in their diagnosis, in every instance he had found these growths by drilling into the teeth. Now for a rain of pulp stones.

How marvellous it is that so many men of intelligence meet with so few cases which they are unable to diagnose. Dr. Kingsley announced that the great banquet now in prospect for honoring the pioneers, will probably come off the last week in January. It is intended to make it the occasion of the season. It is not to be exclusive but a popular affair, calling out many of the younger members to pay their respects to those who have pioneered in the better preparation for a future intelligent practice. At least two hundred and fifty are expected to be in attendance. This is to take place at Clark's restaurant in West Twenty-third street, where the banquet was held at the last anniversary of the District Society. All who were there can well remember what they may expect at this time—a first-class dinner, and a first-class time. For further particulars, see small bills.

At the anniversary meeting of the Odontological Society, held on the evening of December 16th, Dr. William H. Dwinelle was elected President. Drs. Delos Palmer, Eugene, his brother, both sons of the well-known and much respected Dr. Corydon Palmer, of Warren, Ohio, together with Drs. Geo. Wilson, Geo. Winkler and Chas. B. Atkinson, son of the profession's favorite, and

the man of the three W's, were all elected members by the twenty-six voters present. Dr. three W's is now a member of the Odontological Society of New York in good and regular standing, and we congratulate the Society on the accession of one so capable of great usefulness to any body of which he may become a member, as he has already proved as a member of the First District Society. We also congratulate the Society for the transfusion of fresh young blood from the remainder of the list which we have given above.

Drs. Delos Palmer, Geo. Wilson and Chas. B. Atkinson, are all students of Dr. W. H. Atkinson. Here they have opportunity to make their mark. Dr. Benjamin Lord, chairman of the Executive Committee, read a gloomy report of his experiences during the year, lamenting the lack of interest and energy displayed by the members in omitting their duty in the line of supporting the meetings by their presence and contributions. It is intimated, if this society expects to maintain the claim of being the "representative body of the profession" they will have to wake up for large questions are coming up ere long which can not be settled except by fixed knowledge. The question, "Can so many meetings be sustained?" is being asked in some quarters. We think if the four societies, two in New York, one in Brooklyn, and one in Jersey, arranged to have their meetings, one each week, it would be a better division of the time, as many would interest themselves in an interchange of attendance. This would result in energizing all of the bodies, and not a few of the members would find themselves much the gainers thereby. Many of these are quite young and untrained and are really in need of such association. These societies rightly managed can be made a power in progress, as by a joint unity they could be put upon a prosperous basis, with library meeting, lecture and clinical rooms, and a hospital, making it an institution worthy of the greatest pride. It is asked, "What has become of the committee appointed by the Odontological Society three months ago and instructed to confer with a like committee invited from the District Society? As yet no such committee has been appointed by the First District Society. This enterprise ought to be an accomplished fact by '93 so that our foreign brethren can find something of unusual professional interest in New York and not let Chicago carry off all the glory. Why cannot Chicago dentists carry out a like plan with great credit to itself? *Review* the matter and act upon it. Dr. Crouse has energy enough to

carry it out alone if he set himself about it, even if he had to pay the whole bill. A man who can afford to run a special railroad train to the American Association in spite of the delays of railroad officials has got grit. Such men are much needed.

Perhaps he is too much interested in protection. This reminds us what protection has done under the McKinley bill. It has put up the price of Ash's pinless teeth in New York from \$17.50 per thousand to \$52.50 per thousand. Societies are passing an adverse vote to such proceedings. As we are not versed in politics we cannot give any opinion why this is so. We have thought, however, that it might have come about unintentionally, by being classified among the goods that are included under the head of ceramics, porcelain goods and crockery. Just at this time there is a great deal of italicized oratory on the subject and an intelligent statement coming from an authorized source would relieve a good deal of dental irritation. Anything in our *materia medica* that will meet this case ought to be put on the market at once as we think.

In our November letter we noticed that there were ethical discords which threatened to open the whole question of the value of codified ethics. It has proved a livelier bird of prey than the council had counted upon. So far, they have not been able to wing it, and all that can be heard after each of the council conferences, like Poe's raven, is "Nevermore!" It looks like a dilemma into which the unwary have fallen. The November number of the *Mirror* has it that the vouchers for the letter claimed in the *International Journal* are missing; that makes it bad. Rumor has it that the complainant has demanded that the society shall decide whether the code has been violated. There does not seem to be an easy way out except by meeting a square issue. Let those who say we need codes of ethics do their duty though the heavens fall. That we need ethics goes without saying, and we should think that in this enlightened age that that is all we do need.

Tuesday evening, Dec. 22d, we participated in a very fine dinner with the Brooklyn Society. It was noted for its moderation, and quietly ended in smoke. At our left we had a vegetarian, but he managed to eke out a very comfortable dinner, steering as clear as possible as one could of the animal in the "hodge-podge" style of *cuisine*. Our observation leads to the thought that such a diet brings quiet to the system but does not bring the vim. A good subject for literary ability to handle, which might not be out of

place in a dental journal—"Vegetable and Animal," or "Vegetable *versus* Animal," which?

More of the veterans of the society were present at the last meeting, yet too many were absent. The attendance in all made 54. To say that any one was missed of the absent number was not made manifest, and the only cause we could assign would be that it was so full of unabated interest. Why, it warmed our hearts as discussion went on to eleven o'clock, and then the best thing in the month, by Will Johnson, had to go over until the last Monday in January.

How incidentally things come about !

It was a new deal and, strange as it may seem, New Jersey chaperoned it on the boards. Here comes in Kingsley for fertile invention, viz.: a symposium, first brought out at the New York Society. Dr. Stockton, alias Eastern Editor, alias Demosthenes, alias a jolly, bright fellow, pretended that he did not know what a symposium is, intimating that Dr. Atkinson had told him that in Rome it meant something to drink. The doctor cannot get a commission for the sale of Jersey lightning at the next International Medical Congress. Well, the doctor would not be himself if not for his post-prandial style, although after the froth, comes the brewed beer.

If Dr. Harlan had been present he would have felt he had a double; when the doctor unfolded his part of the symposium, it reminded us that there was "nothing new under the sun." N. B.—"Always put on the rubber cloth, apply cocaine with the arsenic and leave from twenty-four to forty-eight hours, use tannin, yes, tannin"—he had seen somewhere within three or four days where some fellow used tannin. "Now, gentlemen, this is my method, and it is a very successful one, indeed." Dr. Watkins, of Montclair, New Jersey, followed as "symposer," No. 2. He introduced his contribution by prefacing it with a *carte blanche* endorsement of Dr. Stockton's method of dealing with a pulp, as it is a fac simile of his own method. Behold how doctors do agree!—both in one State ! I once saw a violent cyclone created by a statement made contradictory to the familiar proverb, "doctors disagree !" The reply came in an emphasized manner, "doctors never disagree." The one that got in a gale had an "M. D." of easy degree from way back.

Drs. Ottolengui and Wilder completed the symposium, adding

to the interest of the subject under consideration. Afterward, Dr. Jarvie spoke of tentative treatment of pulpless teeth, taking the ground of radical treatment and claiming, as a rule, the treatment of pulpless teeth should be completed at one sitting. This treatment, coming from one whose practice is somewhat conservative, weighs favorably.

Dr. Schultze, a cultivated, energetic and "right smart" German, who understands himself in a large sense, made a decided impression by remarking upon his experience of a little over one year's duration with Dr. Herbst, of Bremen. The doctor by a coincidence of circumstances, returning to his native land on a visit was induced to associate himself with Dr. Herbst on account of the sickness of a brother. This experience has made him a decided convert to the value of the Herbst method. The doctor, by his intelligent explanation of what constitutes the ability to make operations of thoroughness and utility by the Herbst method, was worth being listened to, if only used as an illustration of what should be more commonly applied in every endeavor for the acquirement of legitimate skill.

The doctor also gave what proved to be a curious yet interesting account of Dr. Herbst's method of dealing with the dental pulp after being devitalized by the use of cobalt. Although this may be scouted at by the reader, one who had heard the method understandingly explained, could not fail to be impressed. Dr. Herbst approaches the pulp with a good sized bur in the engine, and proceeds at once to remove that portion embraced in the chamber. He then proceeds to fill this chamber with plegets of tin foil, after the Herbst method, without removing the remaining portions of the pulp, thereby completing the operation at once. The query will at once arise: "What will be the results of such a class of operations?" We would say plenty of cheek, first-class abscesses and intense suffering thrown in.

Dr. Schultze states, which all were impressed with the truth of, that such results did not follow—understand that he had had an observation of a little over a year. These remarks stirred the energetic mind of Dr. M. L. Rhein to the recollection of like dealing in his father's practice, with like results. We do not judge from anything that we heard in this direction that there is any probability of abandoning our present methods which are being advocated with so much emphasis.

This letter would hardly seem complete without mention of Koch, Kochine and lymph treatment. In the December number of the *American Medical Journal*, published in Chicago, page 884, Dr. Koch says, "Involuntarily the thought has awakened as to whether the new method cannot be used in connection with surgical measures, and other curative means in the relief of these severe cases." Having heard Dr. Garrettson in remarks upon pyorrhœa, before the First District Society, some few years ago, his classification of the different phases manifest in pyorrhœa alveolaris, he gave the term of one of them to tuberculous conditions. These remarks of Dr. Koch, as quoted, suggests to me whether this lymph treatment might not be made to manifest a curative measure in connection with this tubercular expression in pyorrhœa. If it be true as Dr. Garrettson says that it is an expression of tuberculosis, is it not a matter worthy of experimentation and investigation?

In the last echo of the dying year is heard the booming of "cannon" Farrar's "Great Book" which has started thundering down through the ages, *Veni, Vidi, Vici*. Ex.

THE TENTH INTERNATIONAL MEDICAL CONGRESS.—A VISIT TO THE BRITISH DENTAL ASSOCIATION.

By W. C. BARRETT, M. D., D. D. S., BUFFALO, N. Y.

(Concluded from page 1021, Vol. IV.)

An English society or scientific meeting presents none of the free and easy peculiarities which too often distinguish American conventions. There is in the English mind an inherent respect for the powers which be, and this native tendency is carefully cultivated and fostered. As a consequence, the duties of the English president or chairman are not very onerous. All he has to do is to look dignified, entertain motions and speak pleasant platitudes of occasional commendation. The courtesies of debate are never disregarded. All remarks are addressed to the chair, in urbane language, and if a speaker desires to express dissent to any proposition, it is done in a circumlocutory manner, that the proprieties of the occasion may not be violated.

I remember that, at the Exeter meeting of the British Dental Association, the author of a paper which had, for an English meeting, been severely criticised, in his final answer desired to intimate that

the chief of his opponents was sometimes rather diplomatic, and took different views of the same question to accomodate himself to the preferences of his audience, and he did it in this wise:

"One of the chief charms of the charming speeches and essays of the gentleman, lies in the fact that if, by any choice, there be a drop of poison in one of his paragraphs, its antidote may be found in the next; and if a doubt be expressed at one time, its answer is assuredly found at another." Then he proceeded very conclusively to quote this gentleman against himself. The audience saw the point and applauded rapturously.

How much better this than to have said: "The gentleman is inconsistent, and don't know his own mind." The polished sword cut even more deeply than would have done a mangling saw, and the victim who received the smooth thrust, instead of exhibiting offense, was obliged to join in the applause at his own discomfiture. In America, personal altercations upon the floor are quite too common, but the spectacle of one member assuming the function of the chair and hoarsely bawling, "I call the gentleman to order," is never witnessed in England. I don't know what would happen if an English chairman should rise to his feet and directly name a member as being out of order. I suspect that the roof would fall ——— metaphorically at least. Perhaps English debates are not as pungent and spicy as those in America, but I, for one, should be glad often to miss this flavor, and would relish the meat better without sauce.

The uniform courtesy with which a speaker is treated in an English meeting, and the general air of decorum manifested, are very pleasant to behold. And yet, if a member degenerates into a bore, he is very quickly apprised of the fact in a way that we might consider rude. At an Exeter meeting one member, who was perhaps the most generally respected of any one present, ventured on one occasion to occupy rather more time than seemed fair to the rest, and rose to speak a third time before others who desired it had been given an opportunity to be heard. He was met by a storm of coughs that quite surprised both him and me. He immediately recognized the situation, and with a polite bow to the chair and an "I beg your pardon," took his seat. Then he was cheered for his complacence and the good humor with which he accepted the rebuff.

I am inclined to think that they recognize public services bet-

ter in England than they do in America. In the work of securing the passage of the dental act in the English Parliament, Mr. Smith Turner took the laboring oar, and for some months devoted himself to the task with an earnestness and assiduity that secured success. Shortly afterward a dinner was given to him, and he was presented with a purse of a number of hundred guineas, and a very valuable watch and chain. Ten years afterward the debt had not been forgotten, and at the Exeter meeting a fine portrait of him, by one of the best painters of England, was presented to the British Dental Association, while a replica of it by the same artist, which could scarcely be distinguished from the original was presented to Mrs. Turner. It was a very happy incident of the meeting.

A list of the papers prepared for the occasion will give an idea of what occupies the attention of the British dentist in professional debates. They were as follows :

1. On Conservative Dentistry: Its importance as a National Institution.

2. On the need of a Higher Qualification in Dental Surgery.

3. On the teaching of Mechanical Dentistry to the coming Dental student.

4. On some Porcelain and Gold Crowns for Bicuspid and Molars.

5. On a Model, with Drainage Tube attached to the Antrum.

6. Crown Bar and Bridge Work.

Of demonstrations there were in anæsthetics ———

A—Nitrous Oxide with special arrangements to avoid noise, etc., adapted for nervous persons and children.

B—Nitrous Oxide and Ether.

C—Ether.

D—Chloroform for prolonged operations about the mouth.

Then there were demonstrations in pivoting, crowning, the use of the electric mouth illuminator, a method of adding gum to ordinary artificial teeth, removable bridge work, the fitting of seamless collars by the mandrel system in connection with gold crown and bridge work, preparing interstitial cavities in teeth for gold filling by means of separators, immediate treatment and filling of suppurating teeth, together with several new appliances by dentists, which, strange to say, were not patented ; and the display of dental materials by the dental depots of C. Ash & Son, the Dental Manufacturing Company and Barth & Co., of London.

It will be seen that all this, in connection with the social festivities of which I gave an account in my last article, was quite enough to absorb the attention of a four-day's meeting. I was somewhat surprised at the great preponderance of the practical over the theoretical, for I had anticipated—I don't just know why—that the contrary would be the case. However, the operative clinics were not of precisely the same relative importance that they usually assume with us. The English are excellent mechanics, and many of their instruments and much of their work would be a surprise to Americans. Whether in England or America, the cross-roads dentist who has never strayed beyond the bounds of his county, is apt to imagine that professional excellence is mainly confined to his nationality, if not to his own office; and the most professionally bigoted practitioners I have ever met, are those, whether of London or Chicago, who have never given themselves the chance to compare foreign methods with their own.

The paper which attracted the greatest general interest was that "On the Need of a Higher Qualification in Dental Surgery," by Mr. G. G. Campion.

The author is a young man, but he handled his subject with so much ability, he exhibited such evidence of careful thought, such a mastery of his theme, and withal showed such skill and readiness in debate, that he was at once marked as one of the coming men in his profession.

He took the ground that the degree of L. D. S. was not comprehensive enough in its requirements to meet the wants of a progressive profession: that it did not indicate a sufficiently broad scholarship, and that there should be provided a degree of a yet higher grade. He urged against it the objections that in this country the D. D. S. has met: that it was, in fact, but a badge of partial culture. The subject was debated on two days. Any other than a man of Mr. Campion's ability would have been crushed in the first hour, for the weight of opinion was decidedly against him, the general consensus being that if the degree of L. D. S. did not mark a sufficiently high status, its requirements should rather be raised than that matters should be further complicated by adding another degree. If the possessor of the dental degree was not satisfied, the medical schools were open to his ambition, and he would there find sufficient scope for his activity.

I listened to the debate with an absorbing interest, because it

is the same educational problem which is engrossing so much of our energies. I was enabled to catch the drift of English sentiment and to compare it with what I knew of our own. It was plain to see that the tendency was distinctly toward a yet closer union with medicine and at the same time to cherish and foster the distinctive dental degree. These were believed to be not inconsistent with each other.

In either England or America it is as yet impossible to tell what shall be the outcome of the educational question. Will there be a final absorption of dentistry by medicine, or will they become yet more divergent and distinct? There are many phases of each which are identical, and there are others which are at variance. Shall the separate degree be abandoned or acknowledged as a degree in medicine, or shall it be made to cover so much of the general field that a medical degree shall have no place in dentistry? Such exhaustive debates of this matter and such able expositions as the paper of Mr. Campion afforded, enable us to determine the present position; to take an observation which, being repeated one, two or five years hence, shall permit us accurately to determine the rate and direction of the drift in professional matters.

The demonstrations in anæsthetics were by Dudley Buxton, one of the best authorities in England. They attracted more attention than they would, I think, in America. The English, the French and the German extracts more teeth than does the American, who is taught to save such as are ruthlessly sacrificed by the average European dentist. No one at an American meeting ever saw such dental butchery as was exhibited at the Berlin congress, and I doubt if an American representative society would witness such extraction of teeth which might be saved as was seen at Exeter, though the latter in repulsiveness was as nothing in comparison with the former. Some way, Americans consider it rather *infra dig.* to be caught pulling teeth. It looks too much like amputation—a confession of failure. We extract, of course, but we don't make an exhibition of it. In Europe it is considered as a rather high grade of dental surgery, and receives corresponding attention.

At the Exeter meeting there was not as much of pure science brought to the attention of the society as I had anticipated, and I was proportionately disappointed. The exhibitions in microscopy and of electrical apparatus, and the projection upon the screen of pathological and other objects, with the accompanying lectures,

were of a decidedly elementary character, and such as would engage the attention of only local American societies. But the lively interest manifested by most of the members indicated an intense desire for information, and promises exceedingly well for the future.

Altogether, the meeting was one of great interest and profit, and I was amply repaid for the time and money expended in attending it.

We are all of the same blood and possess the same leading characteristics, and there is so much to learn by the practitioner of either country who visits the other, that a great meeting, like that at Exeter, must prove profitable to anyone who is content to listen who is not so bigoted and opinionated as to have little respect for the views of others. England is a wonderful country, but it is not all the world. America has an immense spread of territory and is making giant strides, but the sun shines on yet other lands. After a summer spent with dentists of far away countries—and not my first experience among them either—I returned with an added respect for my foreign confreres, but with an increased love for my own country, a greater affection for my American brethren and a confirmed impression of the truth of Bishop Berkeley's apothegm—

“Westward the course of empire takes its way.”

REVIEWS AND ABSTRACTS.

SLEEPING AT COMMAND. Interesting Exhibition by Professor Roberts before Scientific Men.

Twenty wide-awake dentists and several men of medical science, with skepticism written all over their profound faces, sat in club-room A at the Grand Pacific hotel a few days ago and listened to an interesting discourse on “Hypnotism.” Professor Norman J. Roberts, of Waukegan, Ill., was the lecturer and hypnotologist. Before the professor finished his clinic and his hypnotic demonstrations he succeeded in putting about half of the learned doctors and wide-awake dentists asleep. They all went home feeling ashamed of their skepticism. The clinic was for the benefit of the Chicago Anæsthetic Club, which holds regular monthly meetings, and which boasts of being the first club of its kind ever organized. It is hard

at work investigating the science of anæsthesia. It has now forty members, and is rapidly growing. Dr. G. Leininger is president and Dr. B. J. Cigrand secretary. The first thing Professor Roberts did was to recommend the study of the history and development of hypnotism as set forth in the "Humboldt Library" for August, 1889. Hypnotism, he said, was a very old science, but only within the last three years had it been employed by French surgeons for producing anæsthesia for painless operations. Hypnotism, the professor declared, was no trick or farce, but a reality that must be studied and understood before its power could be recognized or felt. Too many set it down hastily as mere quackery or the result of a diseased imagination. It was nothing of the kind. All the professor's investigations had been to advance the science of anæsthesia and not for "show" purposes. He predicted that hypnotism would take the place of ether and chloroform inside of three or four years, and that special men would be found to hypnotize patients for all operations. The conditions of the patient who could be successfully hypnotized were absolute quiet, concentration of mind and non-resistance.

In proof of his theories, Professor Roberts brought forward three subjects on whom he had previously operated. They were two half-grown school boys and a young man. By a few passes of the hands and words of command each of the boys were put asleep. Then needles were put through the flesh of their faces and hands, and they never winced. One of the subjects slept with his mouth wide open. "What a fine chance for a dentist!" exclaimed the hypnotologist. "He would sleep with his mouth open there a month if you would let him. You have to suggest whatever condition of mind you want to your patient and he carries it out." "Sleep, sleep, sleep hard," were commands used by the professor. When his patients slept and he was about to pierce them with large needles he kept saying "cold, cold, numb, no feeling, no feeling." A physician who kept tab said that during the time the boys were under the mesmerist's influence, their respiration was sixteen and their pulse normal. A peculiarity of one subject was that it required a longer time to hypnotize one of his sides than the other. To one of the small boys the professor said: "When you wake you'll see a pretty bird and try to catch it," and sure enough the boy did. To another he said: "When you wake you'll have the toothache,"

and that boy clapped his hands to his face and rocked his body to and fro as if in torment.

The professor said he had many hypnotic patients who would not consent to appear in public, but willingly submitted to his control in his private office. In conclusion he exhibited a new apparatus for producing sleep by mechanical means. This was a revolving mirror which flashed the lights from four or five surrounding lamps. The professor got the doctors in a semicircle around his machine. He told them to take comfortable positions, concentrate their minds on the flashing mirror, and gaze at it steadily with wide open eyes. In fifteen minutes many of them were asleep and snoring. Presently the mesmerist allowed them to wake up. They rubbed their eyes, looked around in a dazed and sheepish sort of way and went home not knowing whether to believe in hypnotism or not. Among those present were: Drs. Haskell, Pierce, Rennebaum, Wachter, Marshall, Biglow, Fish, Pfennig, Whipple, Jeffers, Anderson, Beni, Kargau, Roberts, Whittemore, Dittman, Bartholmew, Williams, Birchell, Schnell and Patrick.—*Exchange*.

TRANSACTIONS OF THE ILLINOIS STATE DENTAL SOCIETY at the twenty-sixth annual meeting held in Springfield, Ill., May 13-16th, 1890. Chicago, 1890.

So far as the subject matter of this 172 page volume is concerned, it is not wholly up to the standard of the Illinois State Dental Society. With the exception of one or two of the papers read before the society, the transactions do not contain contributions quite equal to those published in previous years. In this respect it may be hoped that the present Executive Committee will endeavor to eclipse the late and several previous meetings of the society. The general typographical make-up is equal, if not slightly superior to the publications of recent years. The publication committee should have been able to prevent the creeping in of many errors, which mar the otherwise well-prepared matter.

PAMPHLETS RECEIVED.

Annual report of the Postmaster General of the U. S. for the fiscal year ending June 30, 1890. Washington Government Printing office, 1890.

THE TEACHING AND HISTORY OF MATHEMATICS IN THE UNITED STATES. By Florian Cajoli, M. S. Washington Government Printing Office, 1890.

Sixth report of the State Board of Dental Examiners of Wisconsin, 1890. Also the official roll of qualified Dentists for the year ending September 30, 1891. Edgar Palmer, Secretary. La Crosse, Wisconsin: Republican and Leader, 1890.

UEBER DIE VERÄNDERUNGEN DES ZAHNBOGENS BEI DER ZWEITEN DENTITION. (Regarding the changes of the dental arch during second dentition). By Dr. Otto Zsigmondy, Vienna, Austria. Reprint from the Archives of Anatomy and Physiology, 1890.

PRACTICAL NOTES.

A CASE OF REPLANTATION.*

BY DR. C. H. ROBINSON, WABASHA, MINN.

In 1882, Herman A., a young man of German parentage, came into my Preceptor's office early one morning, suffering severely from pericementitis of the right upper lateral incisor, resulting from death of the pulp.

My Preceptor had not yet come to the office, and as the young man was suffering greatly, he persuaded me, a student of but a few weeks, to extract the tooth for him. This I unhesitatingly did, as I was anxious to get as much practice as possible.

I told him to come in again within a few days and we would make him a plate with one tooth on it, to supply the place of the one just extracted.

Shortly after he had left the office my Preceptor came in, and after giving me a lecture for having extracted a tooth which could just as well have been treated and saved, said that we would try and replant it.

So we very carefully filled the root and cavities in the crown with oxy phosphate, then smoothened off the end of the root, and filled the apical foramen with tin.

We placed the tooth in tepid water and went after our patient.

Upon his return the socket was washed out with tepid water, the tooth replaced, and he was instructed to bite on it, which he did, forcing it fairly well up to place. It was then ligated and the patient dismissed.

Within a few weeks it became very firmly attached.

*Read before the Hayden Dental Society of Chicago, 1890.

About two and a half years afterward the approximal cavities, which were very large, were refilled with gold, the attachment at this time being remarkably firm.

A little more than a month ago the patient was in to have other work done, and called my attention to this tooth, stating that he had loosened it slightly by getting a grape seed between it and the occluding tooth.

Upon careful examination I found the root partially absorbed and think that the tooth will ere long drop out or have to be removed.

From the time this tooth was replanted up to a month ago, a period of about eight years, it has given no trouble whatever, and it is still doing fairly good service, although it probably will not last much longer.

MEMORANDA.

Report your cases.

Look out for European news next month.

The DENTAL REVIEW for 1891—have *you* renewed your subscription?

The "Pioneers" will be dined and wined in New York late in January.

Dr. D. E. Coulson, of Galesburg, was a recent visitor in the Garden City.

A Post Graduate School of Dental Art has been inaugurated by Dr. C. H. Land, of Detroit, Michigan.

Dr. O. M. Heustis, of Aberdeen, Dakota, was in Chicago in December buying books for the library of that city.

The Mississippi Valley meeting will be a good one, as the Executive Committee are now working up a good programme.

The Chicago Dental Society has under consideration the subject of presenting its library to the Newberry Library of Chicago.

The membership of the Dental Protective Association is nearly 1,500, at the present writing, and the number joining is constantly increasing.

A student of the Baltimore College of Dental Surgery, committed suicide last month, because he was reported to his family for violations of the rules of the College.

It is not true that several new dental colleges have been incorporated in the State of Illinois during the past month. Strange as this may seem, it is nevertheless true.

The Chicago Dental Society has had thirty-three names presented to it for membership during the fiscal year beginning April, 1890. Of these twenty-two have qualified up to the present time.

Dr. v. Isov, of Vienna, has noticed in a case of arsenical idiosyncrasy, the symptoms of gastrolateritis following the application of 0.003 to 0.005 arsenious acid applied for the destruction of a pulp.

It is said of the late Prof. von Nussbaum, the noted German surgeon, that when a boy he would construct an instrument from a nail or old piece of iron, and extract the aching teeth of his playmates.

Inquiries are daily coming in about the classifying of dentists as manufacturers. We have not received a blank and have not heard of a dentist in Chicago who has been asked to fill out one up to date.

A little girl, 8 years of age, recently accurately described the entire operation of filling her tooth, even to pointing out the exact instruments used, having watched the process in the reflexion of the operator's eye.

The Dental Depot of Weiss and Schwartz, of Vienna, for fourteen years located at the Fleischmarkt, has removed into more commodious quarters, Goldschmiedgasse No. 2, Mezzanin, corner of Stefansplatz.

A son of Dr. W. P. Richards, formerly of Englewood, Ill., now of Elgin, Ill., was drowned while skating during the latter part of December. The doctor's many friends regret the sad occurrence and extend their sympathies.

The second annual meeting of the Dental Protective Association of the United States, was held Dec. 1, 1890, at the Grand Pacific Hotel, Chicago. The same officers were reëlected: Dr. J. N. Crouse, President; Dr. E. D. Swain, Secretary.

The following are the offices of the Hayden Dental Society of Chicago, recently elected: President, Louis Ottofy; Vice-President, W. H. C. Cowen; Secretary-Treasurer, J. L. Ubellar; Executive Committee, A. J. Oakey, J. O. Brown and J. L. Ubellar.

The *Archives* has suspended publication—at least for the present. What the future may do for dental journalism in St. Louis—the future alone will tell. The dentists of St. Louis are too enterprising to be long without a journal and we expect to hear of a new venture in this line before summer—time will tell.

A metropolitan branch of the British Dental Association has been organized in London, starting with 64 members and naming Chas. S. Tomes, F. R. S., as president. There are now four societies in London. Chicago has five, New York City two, Brooklyn two, Cincinnati one, Philadelphia two or three and St. Louis one.

To prevent crystallization in the liquid portion of our oxyphosphates, it is well to keep it on a shelf near the stove or steam register. The heat prevents crystallization and even dissolves the crystals when they have already formed. It is well to know that when the liquid has partially crystallized it prevents a perfect union with the oxide of zinc, and hence the result is an inferior filling.

DAVENPORT, IA., Dec. 17, 1890.

The dental profession and trade are requested to co-operate with me in bringing before the Iowa State Dental Society and the American Dental Association anything new that is of value to the profession in the way of methods or appliances. I was chosen by the president of the Iowa State Dental Society and by the section of operative dentistry of the American Dental Association, as a committee on "Dental Art and Mechanism," and want to be able to give a good report.

A. W. McCANDLESS.

The following circular letter has been sent out by Section VI, A. D. A.:

SECTION VI AMERICAN DENTAL ASSOCIATION.—PHYSIOLOGY AND ETIOLOGY.

DEAR DOCTOR—Please keep in mind the fact that responsibility for a creditable presentation of the work of our Section at the next meeting of the A. D. A. rests with its individual members. Will you not therefore at once begin work on some relevant subject, and place your paper in the hands of the chairman of the Section some time during the month of May, 1891? Then copies will be made and sent to each member of the Section, so that its report may be followed by well-considered discussions of all the subjects presented. So much is certainly due to, and will be duly appreciated by the Association.

Fraternally yours,

H. A. SMITH, Chm. Section VI, A. D. A.,

128 Garfield Place, Cincinnati, Ohio.

W. STORER HOW, Sec'y,

Chestnut St., Cor. 12th Street, Philadelphia, Pa.

December, 1890.

ODONTOGRAPHIC SOCIETY OF CHICAGO MEETS SECOND MONDAY OF EACH MONTH
EXCEPT JULY AND AUGUST. PROGRAMME OF ESSAYS TO BE READ
BEFORE THE SOCIETY.

January. (Annual Dinner.) Dr. A. W. Harlan, 70 Dearborn Street. Subject—Recreation and the Conservation of Energy.

February. Dr. E. S. Talbot, 125 State St. Subject—Local Causes of Irregularities of the Teeth.

March. Dr. C. E. Bentley, 279 State St. Subject—Tic Douloureux.

Dr. F. M. Johnson, 511 Belden Ave. Subject—Pulpless Teeth and Alveolar Abscesses.

April. Dr. H. N. Pitt, 491 W. Adams St. Subject—Matrices and Separators.

Dr. H. R. Sackett, Auditorium. Subject—Slow Wedging and the Preservation of Tooth Forms.

May. Dr. C. N. Johnson, Opera House. Subject—Preparation of Cavities.

Dr. W. D. Edmonds, 122 Wabash Ave. Subject—Methods of Working the Different Forms and Combinations of Gold.

June. Dr. C. J. Underwood, Elgin, Ill. Subject—Correcting some Forms of Irregularities.

Dr. A. J. Nichols, 565 W. Madison St. Subject—Partial Dentures.

September. Dr. A. W. Rogers, Opera House Block. Subject—The Uses and Limitations of the Dental Engine, and the care of Office Machinery and Apparatus.

Dr. H. L. Barnum, 628 W. Lake St. Subject—Emergency Cases.

October. Dr. G. W. Haskins, 70 Dearborn St. Subject—The Time, Methods and Extent of Professional Study that should be Advised for Dental Students.

Dr. C. J. Merriman, 177 31st St. Subject—The Standard of Preliminary Education that should be insisted upon.

November. Dr. L. F. Lattan, 269 So. Western Ave. Subject—Indications and Counterindications for Destroying Pulp.

Dr. T. A. Broadbent, 70 Dearborn St. Subject—Operative Procedures for Destruction and Removal of Pulp and Filling of Roots.

December. Dr. D. C. Bacon, 281 Lincoln Ave. Subject—Dental Medicine and Therapeutics.

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OBITUARY.

DR. J. WARD ELLIS.

Dr. Ellis died at his home in Chicago, No. 9 Bryant avenue, Saturday afternoon, December 20th, 1890, after a sickness of three months.

Dr. Ellis was born in Norwich, Conn., February, 1828. He received his education in his native town and began the practice of dentistry at that place. He moved to Westmoreland, N. Y., shortly afterward, and in 1851 went to California. He opened an office at Stockton, Cal., and practiced at that place several years. He located in Chicago in 1857, and pursued the practice of his profession in this city up to the time of his illness.

He was a prominent Odd-Fellow and had held the office of Grand Master, Grand Representative, and other positions of honor in that order. He was also prominent in the Masonic fraternity, and was a member of the Knights of Pythias. Dr. Ellis was elected President of the California Pioneers Association when that organization was first formed, and held the position at the time of his death. He leaves a wife and one son.

JANE J. PATRICK.

A telegraphic dispatch from Quincy was received in this city yesterday morning announcing the sad news that Mrs. Jane J. Patrick, wife of Dr. J. J. R. Patrick, had died. The intelligence threw a cloud of sorrow upon the great number of friends of this most estimable lady in Belleville.

Mrs. Patrick had been in poor health for some time previous to her departure for Quincy, where she breathed her last. She was a lady in the best and truest sense of the word, and one who to know was to appreciate. The best evidence of her true worth is found in the host of friends who mourn her demise.

The remains reached Belleville yesterday evening about 8 o'clock, over the L. & N. road, and were conveyed to the residence of Dr. J. J. R. Patrick, on North Jackson street, from where the funeral will take place to-morrow (Monday) at noon. The interment will be in Green Mount cemetery. Friends of the family are respectfully invited to attend.

The funeral of the late Mrs. Jane J. Patrick, who died at Quincy, Ill., on Friday, December 12, 1890, took place yesterday afternoon, from the late residence, on North Jackson street, and was very largely attended by the many sorrowing friends of the deceased. The interment was in Green Mount cemetery. The pall-bearers were the following gentlemen from the St. Clair County Medical Association: Dr. Julius Kohl, Dr. D. S. Booth, Sr., Dr. L. J. Bechtold and Dr. D. Heeley; and from the St. Louis Dental Association, of Missouri: Drs. McKellops, Fuller, Wick and Eames, of St. Louis; and Dr. Mace, of Belleville.

—*Belleville Paper.*

THE DENTAL REVIEW.

VOL. V.

CHICAGO, FEBRUARY 15, 1891.

No. 2.

ORIGINAL COMMUNICATIONS.

REVIEWS VS. SOCIETY DISCUSSIONS.

BY CALVIN S. CASE, JACKSON, MICH.

The value of ideas is largely determined by their competency to withstand the test of honest and able criticism. But let it not be forgotten "it is much easier to be critical than correct." (*Disraeli.*) And "the strength of criticism lies only in the weakness of the thing criticised, (*Longfellow.*)

Papers presented at society meetings are valuable to the profession largely because of the discussion they provoke. Yet we are often led to a false estimation of papers by the standing of the society from which they emanate, or the character of the discussion which time and opportunity would not permit being properly mature or thoughtful. Again, many contributions to our dental literature through the medium of periodicals, are under or over-estimated because they come into no open contact with competent parallel experience and thought; though oftentimes it is because the real ideas and methods of the writer, in practical detail, are imperfectly understood.

A great field of progress lies open before us to be tilled by the pen in a more thorough and thoughtful discussion of papers from whatever source, than can be or is accomplished at society meetings. If it were more common for dentists who find among these almost innumerable contributions things of special value little known, or questionable methods of procedure, to write their opinions in a friendly but honest spirit, the profession not alone would be benefited, but the writer of the original paper—if he is

worthy to be called a dentist having at heart the advancement of truth—would invariably be thankful to know the impression which his labors have produced upon others, and glad of an opportunity to correct errors and misleading features of the text.

Only cranks and men of small mental caliber feel called upon to prevent the downfall of their fallacies by personal irrelevancies.

As a whole, the dental profession possesses capabilities which have brought it to the front rank of professions. As individuals, nearly all the paths we follow are marked out for us by others, and though the goal we strive for is the same and the success of our efforts to reach it very like, the roads to it are often wide apart and quite dissimilar.

That which A. follows with ease and perfection, is difficult and unsatisfactory for B.; and even among those who attempt to follow similar ways, each will intuitively characterize his progress with individualities wholly his own, which no one can so fully appreciate the value of as himself.

But in the main, through the influence of our system for disseminating original ideas, the paths of progressive dentistry are being reduced to a minimum, shortened, perfected, and more *universally* trod.

The following is an extract from Dr. R. Ottolengui's paper, entitled "MAKING GOLD-CAP CROWNS WITHOUT DIES," which was read before the Brooklyn Dental Society, September 29, 1890, and published in the *Dental Cosmos* for December :

"There is a limit beyond which contouring by means of filling should not be carried. If the remaining portion of a molar does not offer strong retaining shape for a filling, it is preferable to protect the root with a cap-crown. Where only a small part of the wall about a cavity is intact, even though it may seem strong there is a danger that at any time it may be broken off, thus loosening any filling dependent on it for retention. There is another class of cases of which little, if anything, has been said in our text-books in relation to such treatment as I should advocate. Imagine two inferior molars, the sixth-year molar having a large posterior cavity, the twelfth-year molar similarly affected anteriorly. If the caries has extended beneath the gum line, the resulting ragged edges during the process of mastication become a source of irritation, and eventually we find the gum-tissue hypertrophied, or at least highly inflamed, sensitive, and readily made to

bleed. Without entering into the treatment necessary to restore the gums to health, I would simply express the opinion that nothing is as serviceable here as two properly constructed crowns.

“This may seem a strange statement when we remember that one of the strongest arguments against the use of a band-crown is that it frequently produces a diseased condition of the gum border. In my opinion there is nothing more reprehensible than a band *which is forced under the gum to any great distance*. This inevitably results where a band has parallel sides, as too frequently occurs. In constructing a band, a pattern should always be made first. If the mouth is not very wet, this may be readily accomplished with a piece of stiff writing-paper. The paper may be cut with parallel sides, carefully placed around the tooth which is to be crowned, forcing its edge under the gum at all points, and then with a pencil a line may be marked along the gum border. The pattern trimmed to this line will show the shape which should be given to the inner edge of the gold band. If the mouth is wet, use thin sheet lead. Fig 1 shows the outlines of the blank for a band from a practical case made recently. The outer edges and the width were determined as will be described. It will be observed



FIG. 1.

that a band made in this fashion would extend to, but not under the gum. In cases, therefore, where some portion of the edge of the cavity is below the gum line it becomes necessary to adopt some additional precaution. If the border is only slightly below the gum, its outline may be marked on the paper band from within. If it is considerably below, then a post, or suitable screws, or undercuts should be made, and the cervical border raised above the line of the gum at that point by filling with amalgam before the band is fitted. The shape of the inner edge of the band, and the approximate length, having been determined, the band is cut slightly wider than will be needed. I make the bands of pure gold plate about 28 gauge. When annealed, this metal will be found almost as soft as lead. It may be readily wrapped about the tooth.

“After bending the ends at right angles so that they do not quite meet on the palatal side of the tooth, with a pair of serrated pliers the two ends are grasped, and by closing the pliers the ends of the band are drawn together closely, and a tight-fitting band is the result. In soldering, the ends should lap for reasons which will be

given. The band when soldered is placed over the tooth, and an examination on the inside will show whether the work has been skillfully done. If not, it should be unsoldered and refitted. The band should be moderately tight, without going under the gum at all. During the subsequent work it should never be pressed up with any force, because the soft gold will stretch, resulting in a loose-fitting crown. If care is taken in this direction, when the crown is ready for final setting it may be pressed up until the band just passes beneath the free margin of the gum, when it will be found to fit very tightly.

"With the band in position the patient is directed to close the mouth, and the points in contact during occlusion are noted and trimmed away until the band *represents the full height which the crown must assume*. The next thing is to produce close contact with the adjacent teeth. This is accomplished with a pair of pliers, one nose being placed within the band, the other resting on the far side of the adjacent natural tooth. By pressure the band is made to adapt itself to the surface next to it (Fig. 2).

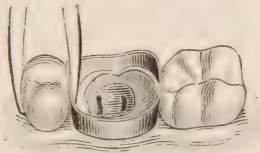


FIG. 2.



FIG. 3.

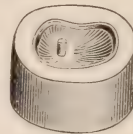


FIG. 4.



FIG. 5.

The band is now removed and laid on the bracket. Take a piece of thin platinum and lay it over the upper edge; place the ball of the thumb on the platinum and press it gently but firmly down upon the band. This will give an impression on the platinum of the circumference of the band. The included disk of platinum being carefully cut out, on the line, will accurately fit into the band, and will have a concave surface produced by the ball of the thumb. A small hole should be punched in the platinum. Next take the band in the fingers, place the platinum in position, hold the two between the thumb and forefinger, and with gentle pressure the platinum will be forced into the band. This is seen in Fig. 3, which shows the band, the concave platinum disk in position, and the hole in the platinum. The piece is then invested, and when the investment is hardened a drill-hole is to be made in it through the little hole in the platinum; through this is pressed a platinum post of diameter just large enough to bind as it passes

through the platinum plate. Fig. 4 shows the investment, the concave platinum, the post in position, and the edge of the band. *Pure gold* is flowed on this surface until a high convex form is assumed. This was why the band was directed to be lapped, in order that the heat should not affect the solder. Fig. 5 shows the crown as it comes from the investment.

"It is next placed in the mouth and ground to an occlusion, after which it is ground into proper shape with engine-burs, and polished. Fig. 6 shows a finished crown, and Fig. 7 the same in position.

"Before the final setting, the post which extends through the crown is to be bent into a loop. Fig. 8 is a section through a crown and tooth, and shows how a firm attachment may be obtained, in which case little dependence would need to be placed on the band. The looped post in the crown is shown, and in this case there are two posts in the roots of a lower molar. In an upper molar a single post in the palatal root would be quite sufficient for all purposes.

"In an ordinary case a crown of this kind can be completed in about one hour. Difficulties in fitting the band would lengthen the time needed.

"The main advantage of this crown over one which is struck, is that it may be used in "short-bite" cases. In fact, it was first devised by me in a case where an abraded tooth in occlusion was very short and very sensitive. A band was made as described, the platinum piece laid in and in that instance burnished to the surface of the tooth to be crowned, waxed fast to the band, invested



FIG. 6.



FIG. 7.



FIG. 8.

and a thin layer of gold flowed over the platinum. This crown was then placed in position, ground to the occlusion, carved into shape and polished. A crown struck up would not have been possible, because the thickness of the part struck up would necessarily have been above the surface of the tooth, and the crown in place would have been too long. It is very convenient to be able to correct the occlusion by grinding. Occasionally, with a perfect-fitting crown,

after setting, it is found that by using an excess of cement the crown is too long. This is by no means uncommon. It is customary to grind the opposing natural tooth, but it is preferable to be able to grind the gold crown, which could not be done with a thin, hollow shell. Another point is, that, as the cusps and band are all of pure gold, there is no unseemly line of discoloration showing where solder had been used. The only solder is the speck of twenty-carat solder used in joining the ends of the band. Even here the expert may avoid solder by sweating the two surfaces together."

There is much in the above paper which is ingenious and instructive; especially the method suggested of obtaining a band with cervical edge parallel with gum margin and dipping beneath to span cavity of decay; also remarks relative to the distance a band should extend beneath the free margin of the gum. In this connection I am pleased to repeat a sentence from a paper read at the last meeting of the A. D. A.: "A band should extend beneath the border of the gum only so far as to subserve purposes of strength and prevent the lodgment of food along its edge." The last clause of this sentence seems to be considered by Dr. Ottolengui of less importance than we have been lead to suppose, where he says: "It will be observed that a band made in this fashion would extend to, but not under the gum." And further: "When the crown is ready for final setting it may be pressed up until the band just passes beneath the free margin of the gum."

I believe that all skillful operators are very particular to remove all projecting and over-lapping edges of a filling;—especially when it extends beneath the free margin of the gum—for reasons which require no explanation. The same reasons I think are considered equally applicable to the cervical edge of a band. But as the latter, however thin and perfectly adapted (and too often they are neither), is resting entirely upon the outside of the root, with the edge necessarily producing a shoulder of more or less width, it has been the aim to enclose and protect it beneath sufficient depth of gum to obviate its deleterious possibilities.

It is my opinion that anything short of this should find the edge of the band entirely free from the gum, with sufficient space between to admit of being kept clean by the ordinary brushing. Nor is this bad practice with posterior teeth, where it is possible to

finish and burnish the edge against the enamel with an almost imperceptible shoulder.

If it were possible to perfectly fit the cervical edge of a crown to the peripheral border of a root without overlapping it, as is shown in his Fig. 8, the joint would then have the same advantage against environing influences as a well finished gold filling. But as this is probably the engraver's work, not intended by the author, it need not enter into the argument.

As nothing is said about cleaving off the enamel and shaping the root, I take it for granted this is implied, where he speaks of pressing the crown up a little further than where the band was originally fitted, and says: "It will be found to fit very tightly;" a thing that could not be true if the enamel was left, as it would pass toward a decided cervical constriction of the root, with an inevitable space beneath.

These considerations relative to the position and physical character of the joint between the crown and root may be considered hair-splitting points, but they are nevertheless vitally important, and cannot be too strongly impressed upon crown makers; for it is here we find the most inexcusably imperfect part of the whole operation.

I am glad to give a most hearty approval of the use of pure gold for crown bands. It is so easy to draw in the edge when too large; to expand it when too small; and to subsequently finish and burnish it into all the inequalities of the root. When so burnished it will be found to possess sufficient rigidity and strength for every purpose. The balance of the operation as described is certainly very ingenious and applicable for denuded teeth, and those worn down and cupped out by mastication, but I do not think it will practically bear comparison with present methods in all instances when it is desirable to reproduce the contour and sulci of cusps. The effect when finished from the hands of a majority of dentists, would be far from artistic; and even of the few who possess ability to produce a passable representation of the occluding surfaces of molars and bicuspidis, it would take far more time than another way which is replete—as this is not—with principles of mechanism and easily acquired possibilities for artistic effect. That it presents sufficient material for grinding away is no argument in its favor, for the cusps of gold crowns should always be made solid—never "hollow shells." Besides, if the crown is mechanically constructed, little grinding of the cusps is ever necessary.

Let us suppose that we have made a pure gold band and pressed it to its proper position on a lower molar root. Its height should be nowhere more than one-sixteenth of an inch from occluding teeth.

Now, by the use of a steel die-plate in which intaglio cusps of teeth have been sunk, cusps of pure or 22k gold can be struck and finished in less time than it takes to describe the method.

Have the gold for this purpose rolled about one-sixteenth of an inch thick, from which cut a piece a little smaller in diameter than the selected intaglio. Strike into place with a smooth-faced hammer and file off surplus even with the face of plate. A slight experience will enable one to start with a piece that will evenly fill the depression with little surplus.

If it is desirable to make the cusps thicker, start with a larger piece of gold and file off overlapping edges. If you wish the cusps smaller or thinner than the selected intaglio, first swage a shell of brass or german silver, to be used as a matrix, of sufficient thickness to produce the proper abridgement.

Some prefer to use thin gold plate, swaged to place with small pieces of lead or bullets, and filled with a lower grade of gold. For this purpose use gold plate alloyed one-fiftieth with platinum and fill with gold as near the color of band as possible, in case it is necessary to cut much from borders or cusps.

Lay the cusps thus made upon the band and bring occluding teeth to position. If much cutting of the ferrule is necessary to perfect articulation, it should be filled with plaster of Paris or other filling to prevent bending in the process of grinding down. Finally perfect joint on the outside of the mouth, unite the parts and finish.

Another resort for fitting the cusps to the band and one that will afford an opportunity for great precision is as follows: Take bite and a plaster impression of the immediate section, with band in position. When this is filled it should give perfect antagonizing models, with band in exactly the same relative position it occupied in the mouth.

To avoid the possibility of an error in readjusting the band to the plaster impression when it is not drawn from the root, I take the impression in sections—using two pieces of thick sheet lead about as large as a silver dollar cut in halves, for impression trays. I fill the band with modeling compound and make the sections

part from it in such manner that it may be perfectly adjusted to place before filling.

If the ends of the band have been joined with squared edges and soldered with 22k gold, reduced with equal parts of silver and copper, the cusps may be united to band with a 22k solder which has been reduced with an alloy composed of silver 1, zinc 2 and copper 3, and in a manner that joints cannot be detected when finished.

Since writing the above I have reason to thank Dr. A. E. Matteson for suggesting the following solder for gold crowns. It fuses and flows readily and with no perceptible difference in color.

For soldering bands: pure gold 1 pwt., cadmium 1 gr. For soldering cusps to band: pure gold 1 pwt., cadmium 2 gr.

The gold should be brought to a fused state on a piece of charcoal or in a crucible, and the cadmium suddenly thrust into it one grain at a time.

Before the ferrule is pressed to place preparatory to fitting and joining the cusps it should be contoured with suitable pliers and its upper border drawn in so as to present, when finished, a proper artistic appearance—an effect to be desired when compared to those mechanically constructed gold crowns, one often sees with straight parallel sides. Unfortunately, the market does not at present supply the proper tools for this purpose, but if dentists knew how easily they were made from ordinary small flat-nosed pliers, they would soon arm themselves with more perfect implements for the artistic part of the operation. Draw the temper from one nose of the pliers and bend it slightly forward. File the occluding surface of this to any desired shape from a delicate curved lip to a rounded face. Grind a counter-receiving depression in the other lip and polish surfaces. It is not usually necessary to restore the temper as it is to be used only upon thin, soft gold.

RESORPTION OF THE ROOTS OF DECIDUOUS TEETH.*

By A. A. H. HAMER, TAND-ARTS, NETHERLANDS

(Continued from page 12.)

PERSONAL INVESTIGATIONS.

In order to try to solve the question proposed, we were first led to investigate into the resorption of milk-teeth. We followed this method. As soon as the teeth had been extracted they were

* Extracts from an answer to a prize essay published by the Medical Faculty of the University in Utrecht, by W. Van Der Hoeven and A. A. H. Hamer.

treated with the Flemming fluid, in which they remained for twelve hours, first washed with water and then with alcohol of 95 per cent. Then the lime-salts were dissolved by a mixture of 50 parts of nitric acid, 350 parts of alcohol of 60 per cent, and 600 parts of water.

After the lime-salts had been extracted from the teeth, the acid was washed out in alcohol and then we began to imbed. At first we cut the objects with the ice-microtome, and we found the preparations fairly good, but there was a drawback, most of the giant-cells were lost, so that we sometimes had very thin cuts with not one giant-cell. We applied principally the celloidine method.

The imbedding in celloidine was effected in the well-known way: the preparation was first treated with a mixture of ether and alcohol, then with a weak celloidine solution, and afterwards with a stronger one. When the object was well impregnated with celloidine, we put it on a cork, covered it with some drops of strong celloidine solution, dried it for some minutes in the air, and then we put cork and object in alcohol of 60 per cent, in which celloidine is insoluble. The celloidine coagulates and forms a transparent mass, easy to be cut, so that one can judge of the position of the object without difficulty.

Afterward cuts were made with the microtome, which were treated in the usual way, observed either in Canada-balsam or in glycerine. When cutting, the knife of the microtome was wetted with alcohol of 60 per cent, in which the cuts were also collected; then they were stained. After having tried different coloring-matters, saffranine and hæmatoxyline were found best answering to the purpose.

The cuts were put into Canada-balsam or glycerine; for the first method they were successively treated with alcohol of 95 per cent, oil of bergamot, mylol, Canada-balsam; for the second, with water and glycerine, after which the borders were surrounded with lutum.

As well at the center of the pulpa as at the periphery we find a number of giant-cells in the typical Howship's lacunæ. At the outside they are lying against a vascular tissue in which a number of nuclei, which represent as many connective tissue-cells, leucocytes and periost-cells. We remark, however, that giant-cells are not found, in all the Howship's lacunæ we often find them filled up with some smaller cells. We think we have observed that the nuclei of these

cells look much like those of giant-cells ; namely, they show themselves as rather strong light-breaking, oval objects provided with an intensively colored nucleolus. In many places we see that a former resorption-surface has passed into an apposition surface. The corroded cavity is filled up with bone-tissue, in the same way

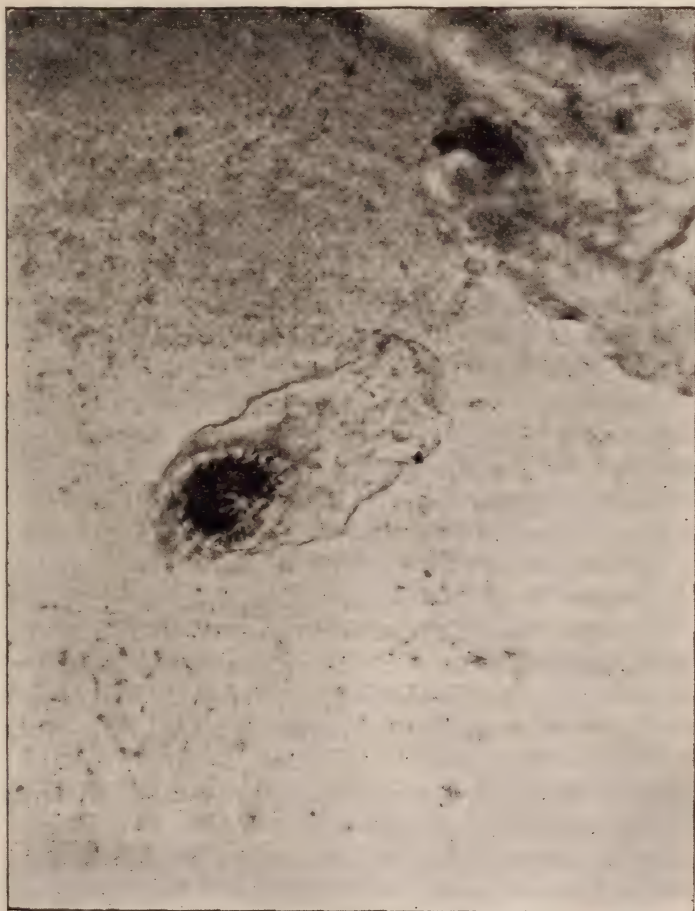


FIG. II.

as with the growth of real bone-tissue old lamellæ of Haver are replaced by new ones. In fact, it is entirely the same process. In this way sometimes very strange figures are formed ; it looks as if the cement has proliferated into the dentine, hence the old theory

of preliminary resorption of Kehrer and Gutheim. It is, however, plain that those figures can be explained only in that way (Fig. I.).

In some of our preparations we see giant-cells in the midst of the tooth-substance (Fig. II.); in this case the Howship's lacuna must very likely be thought continued at the upper or under surface.

The first investigators already thought that pressure was the cause of the resorption. They found analogy with resorption, which elsewhere hard bones can undergo by growth or increase of size of soft tissues; as is known, the sternum can even be perforated entirely by an aneurysma aortæ, also vertebræ can in this way be resorbed for a great part; growing tumors, carcinomata, sarcomata, etc., can likewise cause hard bone substance to resorb. The first thing to think of with the milk-tooth was therefore to attribute much to pressure. It was indeed discovered, that resorption first appears in that place where the milk-tooth lies nearest to the permanent tooth. Preparations which we have made of young cats also show this plainly.

We also tried to investigate into the matter macroscopically, and found suitable objects in the jaw of a colt. So much bone was removed, that the permanent teeth with the roots of the milk-teeth lay bare. We see, that the permanent tooth lies against the milk-tooth at the inside. If we extract the milk-tooth, we find at the inside of it, corresponding with the permanent tooth, a deep groove. We can observe the same thing at the under jaw of a young sheep. In the same way so much bone was removed that the teeth to be examined lay bare. Here also we see the permanent molar teeth growing against the corresponding milk-teeth. In the places where the milk-tooth is touched by the permanent tooth we see that the root of the milk-tooth shows deep grooves. It is therefore plain, that pressure of the permanent tooth is the cause of resorption. We can, however, bring forward other proofs.

It often occurs, that the permanent tooth grows in an abnormal direction, and then we see the milk-tooth remaining intact to an advanced age. It has been said that the cause of this was not to be found in the abnormal growth of the permanent tooth, but on the contrary, that the permanent tooth grows in an abnormal direction, because the milk-tooth is not resorbed. When the milk-tooth and the permanent tooth grow immediately beside each other, as often happens, it is of course difficult to decide which is the cause

and which the result. We saw the permanent cuspid of a woman of 25 years in the place of the permanent lateral incisor and the temporary cuspid still present. It is plain that the latter had not been resorbed, because it had not been pressed by the permanent tooth.

The following also pleads for the theory, that it is not necessary for the permanent tooth to grow irregular, when the milk-tooth is not resorbed. It is a fact, that milk-teeth, the roots of which have been partly resorbed and have afterward been affected by periostitis, do not show any more the resorption process. Such teeth are then pushed out of the alveoli by the growing permanent tooth.

Resorption may also be observed in the case of permanent teeth, when they are pressed by another growing permanent tooth. This can, for instance, take place with the second molar tooth. The third molar erupts much later than the other teeth and if this growing tooth takes a wrong direction, and grows against the second molar tooth, the latter shows a resorption surface at the place where it is touched. Pressure against a permanent tooth need not only take place from aside, sometimes it may happen, that a tooth, that erupts afterward is growing under the full-grown permanent tooth, and causes the latter to resorb at the approximating end.

At any rate, we think we may accept that pressure is the principal factor for resorption. Of course pressure cannot be the direct cause, but we must believe that pressure has a certain influence on the soft tissues that lie against the milk-tooth, by which it is brought to resorption. In our conclusions we shall speak at large of this theory in connection with other facts.

In order to examine from which tissue-elements giant-cells originate, and especially whether they develop themselves out of osteoblasts or not, we thought the best course to take would be to put pieces of teeth into tissues in which no osteoblasts are found. Several investigators have made experiments in this direction and introduced tissues in different parts of the body, in order to examine the result. Ollier introduced in different places of the body of rabbits, pieces of periosteum of the tibia into the subcutaneous cellular tissue. After a few days he saw ossification in all the cases. He thinks that these pieces will continue growing—at least increase in thickness. Cohnheim and Maas, placed pieces of periosteum in the blood-vessels, and differ in opinion with Ollier as to their

further fate. They also observed ossification, but after the twentieth day, they found the pieces of periosteum in a quite different state—shriveled up, no idea of ossification, the vessel in which the embolus lay with the surrounding tissue without any inflammatory or other changes. After a month nothing was found of the perios-tembolus. Because of the fact that the bone which they found to be formed disappeared again, Cohnheim and Maas came to this conclusion.

It is proven that the physiological organism, by virtue of its change of matter, has the capacity to remove from the body that which cannot be made useful, and does not participate in its function.

The anterior chamber of the eye seems to be an exception to this rule. Perhaps the lack of activity in which this material is, may be of influence.

Giovanni Weiss introduced hairs and wadding into the subcutaneous tissue of dogs and pigeons. In most cases pus was formed that came to the surface by means of a fistula. After about thirty days he found the foreign elements enclosed in a granulation tissue that passes into (organized) connective tissue in the outermost peripheral parts. The cells have *not* the character of granulation cells immediately around the foreign elements.

He distinguishes three groups:

1. Small, roundish cells with one nucleus, which have a granular aspect, and which in some respects resemble granulation cells, but they are larger and more granular.

2d. Larger, partly polygonic, partly roundish cells, with small granular contents, and from 2 to 5 oval granular nuclei (epithelioid).

3d. Real giant-cells as they appear in bone resorption in tubercles, etc.; these are very numerous, but appear only in the immediate neighborhood of the foreign element.

His conclusions are:

(a) Giant-cells are formed by coalescence of smaller cells.

(b) The cells which form giant-cells in this way are granulation cells.

(c) Giant-cells form neither connective tissue nor blood-vessels, but show, in the apparently best conditions for life, fatty degeneration.

Because fibers are sometimes found in giant-cells, he thought that he might conclude that they are formed by coalescence of smaller cells which had collected around the fiber. These small cells with one nucleus are supposed to be stimulated by the foreign element, to increase in size and assume a more roundish form, get three or four nuclei and then conglomerate. Yet he does not exclude the possibility that large cells with many nuclei can be formed from one small cell by segmentation of the nucleus or by increase of the protoplasm.

Bonome transplants periosteum, bone without periosteum, bone fragments without periosteum and without medulla, and bone without medulla. He always observes bone formation from periosteum, and he also speaks a good deal of resorption, giant-cells and Howship's lacunæ. When transplanting, for instance bone with periosteum and without medulla, he saw in larger fragments that the central parts had become necrotic and were already in an advanced stage of resorption, which was proved by the presence of numerous giant-cells and Howship's lacunæ, whereas the periosteal surface had not changed worth mentioning and even shows a proliferation of the osteogenetic layer with formation of many osteolite trabeculæ.

In the same fragment were found combined, resorption and regeneration process. In some preparations he saw giant-cells dispersed on the periosteum surface, and exclusively in those places where lively new formation had taken place. Small fragments show an advanced resorption with giant-cells and Howship's lacunæ after 24 days; some pieces seemed to have become soft and cartilagenous. The newly-formed connective tissue lies against the cavities formed by resorption, in which the giant-cells are found; but they are not found in all the lacunæ.

The formation of giant-cells seems to be perfectly clear to Bonome; the ground substance becomes finely granular, the bone-cells enlarge, approach each other; afterward the greater part of the matrix disappears, while a small remainder is left around the old bone-cells. In this way, according to him, a Howship's lacunæ with one or more giant-cells is formed. He has probably not thought of the ivory pins and of the roots of milk-teeth. Then he thinks that resorption is caused by chemical changes of the bone substance. The giant-cells are destined to resorb the remains of the bone-cells and vessels. They are formed at the expense of the ground substance and bone-cells.

We see, therefore, that in different directions experiments have been made to investigate into the influence of tissues on transplanted pieces of bone, etc. But all introduced compound tissues, either living bone with periosteum, or with medullary substance, etc.

We thought, however, that it would better answer our purpose, namely, to trace the causes of the resorption, to render the conditions as simple as possible, in order to have the chance of being able to draw our conclusions with hope of success. We used, therefore, sections of teeth which we transplanted for convenience sake, first of all in the subcutaneous connective tissue. These sections were made from permanent teeth in order not to run the risk of Howship's lacunæ being already present.

From these, sections perpendicular to the pulp were sawed, from which sharp edges and corners were removed by filing, and were kept in a dry state. A short time before using them they were boiled in $\frac{1}{5000}$ solution of bichloride of mercury in order to destroy all traces of micro-organisms.

For our experiments we used two rabbits. The operation was simple. The hair of the skin was cut and the skin disinfected, an incision of the length of one to two cm. made; through this opening the knife was carefully pushed forward under the skin till the point of the knife was at about five cm. distant from the incision, and then it was withdrawn; the section which was boiled beforehand was now pushed in with a pincette as far as possible under the skin. The wound was then sewed with a couple of sutures and covered with iodoform. Acting in this way as aseptically as possible, at first there was some suppuration, but afterward the wound always healed per primam intentionem. Now the

Sections	were transplated,	removed,	remained in the body.
T ₁	June 22d,	July 7th,	2 weeks.
T ₂	June 22d,	July 14th,	3 "
T ₃	July 14th,	Aug. 19th,	5 "
T ₄	July 14th,	Sept. 15th,	9 "
T ₅	July 23d,	Dec. 15th,	10 "

The sections were now treated in the usual way and also imbedded in celloidine and cut. When removing them, the surrounding tissue was also removed.

Every section, before being cut, was divided into two parts, of one-half cross sections were made, and of the other longitudinal ones.

In our cuts we see macroscopically, that the section is inclosed by a capsule, which, when examined, appears to consist of ordinary fibular connective tissue. In some preparations this capsule is pretty thick; it is inclined to retract when treated with different fluids, so that in different preparations the section is not perfectly



FIG. III.

enclosed in the formed cavity. At the inside, between capsule and section, we find a great quantity of leucocytes, which cover the flat surface of the section as a continuous layer. In some places we see giant-cells, which are not very numerous and which are only visible after close examination. The cause of this is, that

most of them look like flat, thin lumps of protoplasm which lie against the section and show an oblong spindle-shaped diameter. Such giant cells are only found at the long side of the cross cuts of the sections. But at the extremities of the majority of the sections we generally find more irregular giant cells, looking more like those we saw, and nearly always in a corroded cavity — a Howship's lacuna, (fig. III). The flat giant cells are not found in typical Howship's lacunæ; it is true the section shows sometimes a slight curve, but as many times it cannot be seen. At the extremities of the cross cuts Howship's lacunæ are often found. Why only here real lacunæ appear, we shall try to explain by and by.

In some preparations we find that the tooth substance seems corroded, not by giant-cells, but by cells that can only be considered as leucocytes. This occurs, however, rarely; the leucocytes are then situated as in miniature Howship's lacunæ.

This resorption of leucocytes is, however, much stronger in a following series of preparations, resulting from tooth sections, from which the salts had been dissolved with the usual acid fluid before the experiment commenced. They were introduced in the body in the same way as the other sections and removed after five weeks and fixed in the usual way; of course it was not necessary for them to be softened. Then they were imbedded in parafine, cut, and the sections fixed with albumen glycerine on the object glasses, and stained with picrocarmin or hæmatoxyline.

In many preparations a great part of the tooth section has disappeared and been replaced by a large quantity of leucocytes. The resorption is effected here chiefly by white blood corpuscles, (fig IV), but we also see giant-cells, as well lying against the tooth section as at some distance from it. It is therefore probable, that leucocytes as well as giant-cells can cause the resorption of the organic ground-substance.

With the above mentioned facts, we think we may draw from our preparations the following inferences.

I. Before resorption has taken place, giant cells may already be present. Herewith falls the hypothesis of Kassowitz, who never saw giant-cells appear in places where no resorption had taken place, and he therefore considered the organic ground-substance as the origin of the giant-cells. Besides giant-cells are entirely free from the sections, even here and there at some distance, and our bone-sections had been boiled beforehand.

In our opinion it is therefore absolutely impossible to infer that giant-cells have their origin in the organic matrix.

II. Kölliker allows osteoclasts to be formed from osteoblasts. It is plain, that we have to do here with the same giant-cells, which we see appear with the usual bone and tooth resorption.



FIG. IV.

In the surrounding tissue no osteoblasts are to be found, giant-cells must therefore originate somewhere else, and this origin can only be found either in leucocytes or in connective tissue cells. (The so-called epithelioid cells of Ziegler, also found here, originate from one of the two, probably from the first). Which of the two

we consider to be forming elements of the giant-cells, we shall try to decide afterward.

III. Why is resorption greater at the extremities of the cross cuts than at the longer sides? This we think we can explain in the following way:

The mass of connective tissue that surrounds the tooth-section as a capsule has probably the inclination to retract, this is the cause with every newly-formed connective tissue (as with the formation of scars). If this has also happened with our sections, then they were exposed on all sides to pressure from the outside. This pressure is very slight at the flat sides, but will have been stronger at the circumference of the circular sections. At the ends of the cross cuts more resorption will have taken place than at the flat sides. We have another question to answer: Why does the process seem as much advanced in all our sections, notwithstanding the first remained two, the last eighteen weeks, under the skin? it might be expected that the resorption process was much more advanced in the last case than in the first.

This is probable, because in the beginning of the process a more lively change of matter, more new formation of connective tissue takes place, and more blood vessels are formed. This is, as we shall see afterward, conducive to resorption. The newly-formed connective tissue retracts and will entertain the resorption by pressure in the way as we saw above. But, in a still later stage this influence ceases, the tissue has not so much blood, and the resorption, if not stopped, will at least be much slower.

CONCLUSIONS.

We have seen above that pressure is the chief factor in bone-resorption, as well as in the resorption of milk-teeth, and we have pointed out that we must not think that pressure is the immediate cause of resorption, but that this must take place in an indirect manner; in other words, by external pressure a process must be caused, the result of which is resorption of bone and tooth-substance.

Which is the nature of this process? Gutheim and Kehrér pointed out that the veins will be more compressed than the arteries, and that therefore a less degree of venous engorgement will be caused, more nutrient fluid in the tissues will be exuded, in which lime-salts are soluble (literally: "Nun könnte das gewöhn-

liche Plasma durch seinen Gehalt an Alkalisalzen die Phosphate und Carbonate des Knochens lösen,") therefore with increased current more will be drained, by which resorption would be made possible.

Kassowitz, on the other hand, attributes the whole process to active hyperæmia; around every blood-vessel there is a territory in which no lime-salts are deposited, but remain in a dissolved state by the CO_2 that is present, and are evacuated by the quick draining of the tissue fluid.

By hyperæmia this territory is enlarged and resorption of the lime-salts, which were formerly deposited, is caused.

Now we think it more logical not to suppose active hyperæmia to be the cause, but venous engorgement, as Gutheim has said already, the pressure of the blood being much less in the veins than in the arteries, and this will, therefore, feel the influence of the pressure much sooner. We think it, therefore, best for the explanation of the resorption to combine Gutheim's theory with Kassowitz', solubility of lime-salts in a fluid that contains CO_2 .

The consequences of venous engorgement will be amongst others:

1. Increased carbonic acid tension of the blood, and by it also of the tissue-plasma;
2. Increased escape of leucocytes;
3. Increased quantity of exuded nutrient fluid.

By venous engorgement the tension of CO_2 in the blood is increased; this will also extend to the exuded fluid, and also cause here an increased pressure of carbonic acid. The more CO_2 there will be in the tissue-plasma, the more lime-salts can dissolve in it; it is therefore likely that the outermost tooth or bone-layers are deprived of these salts. In this way the disappearance of the inorganic mass can be explained.

The fact that the organic mass is resorbed, may perhaps be explained in the following way:

We have stated that our sections which had been softened beforehand, were for the greater part resorbed by leucocytes, and that also some giant-cells appear. In the sections, the lime-substance of which had not been removed, on the other hand giant-cells are very conspicuous as far as there is resorption, and some leucocytes have been noticed. It is therefore likely that both have

an analogous function. That leucocytes can absorb foreign elements is proved by different facts.

First of all we mention the reception of grains of coloring matter by leucocytes; and also of bacteria. Then Metschnikoff and others mention the resorption of muscles by leucocytes with the degeneration phenomena of some larvæ, with the metamorphosis of frogs, etc.

We think more proofs for the phagocytary part of leucocytes unnecessary. We find however, that giant-cells can also act a similar part and appear as leucocytes with many nuclei, with the above-mentioned metamorphoses.

Moreover, several investigators have found in the giant-cells so-called "kalk-krümmel," whose solubility in hydrochloric acid, pleads for their being remains of bone or tooth-substance, which perhaps remained in some place or other and are now absorbed by the giant-cells as foreign elements. It may be supposed that with the rapid removal of lime by the tissue-current, in which there is more CO_2 , some parts remain here and there that do not lose their lime substance, and which are now absorbed by the giant-cells. Besides, in the giant-cells there are other coarse granules which do not dissolve in HCl , and perhaps represent remains of not yet perfectly assimilated organic substance.

The different kinds of off-shoots of the giant-cells which point to amœboid motion.

Also in other respects the resemblance between giant-cells and leucocytes is clear. In cover-glass preparations of giant-cells made by us, we find that with respect to different coloring matters they act perfectly in the same way, and take the same shade of color. This is very characteristic with methylene blue, by which the nucleoli of both are stained intense blue, the nuclei violet, and the protoplasm blue. But from our preparations it can be decided that both elements not only resemble each other, we also find cells which we consider as transitory forms, in which first the leucocytes enlarge, the nuclei likewise grow and divide themselves, so that in this way giant-cells are formed. We are of the opinion that we may therefore conclude that the giant-cells originate from leucocytes. That this process is not without analogous cases, is proved by what Ziegler found in his glass experiments in which there were already giant-cells and leucocytes, before there was formation of blood-vessels.

Lastly, we found in the "Collection of Treatises" presented to Prof. Donders at his jubilee, a treatise by Straub, in which he describes a case of *kyklites* with loosening of the hyaloid membrane. He saw at the surface of the membranes of the vitreous body of the eye in which there are no other cells but leucocytes, giant-cells form themselves with five or six nuclei, which reminded him of Ziegler's glass experiment.

We also find in our tooth-sections giant-cells amid leucocytes. Probably our giant-cells originate from leucocytes. This is likely to be then also the case with the milk-teeth, where, by venous engorgement, amongst others, more emigration of leucocytes takes place, and where they change into giant-cells at the surface that is to be resorbed.

That the engorgement process continues so long, and that the equilibrium is not restored by collateral tracts need not astonish us, because the permanent tooth continues growing; the cause of hyperæmia remains therefore. Even if new ways had been formed for the carrying away of the blood, these would also be pressed in their turn.

Again, the cavity inside the milk-tooth which is filled up by the pulpa, is a filled up space. This engorgement in the veins which come out of the pulpa, makes itself felt through the whole pulpa, by which the resorption process that was originally limited to a small part of the tooth, spreads also through the pulpa and changes it entirely into a resorbing surface.

We have now attributed the resorption of the bone and tooth-tissue partly to a chemical operation, partly to a vital one: the chemical caused by lymph which contains abundant CO_2 , the vital by leucocytes and giant-cells, which are formed by them. It is not unlikely that the operation which is called by us a vital operation of the leucocytes is, properly speaking, also a chemical one.

How can giant-cells be formed from leucocytes? It is not impossible that we may think here of something resembling that which Pasteur observed, when examining fermentation-cells. He proved, namely, that fermentation-cells withdraw oxygen from the sugar-molecule in an atmosphere with little oxygen and produce alcohol, but that this takes place in a limited degree, when there is enough oxygen in the atmosphere. If every fermentation-cell, says Pasteur, could be enveloped in an atmosphere of oxygen, no formation of alcohol would take place. Fermentation-cells would,

therefore, only produce alcohol when in the most unfavorable conditions for life.

This theory, the change of the functional properties, when the environment, in which the cell is, changes, Pasteur applied to other ferments and cells of plants; he explains in this way the difference between dermal and glandular epithelium. Both these cell-forms genetically the same, possess different functions, because the latter are in other circumstances than the former, can absorb less oxygen. Could this theory be applied to our leucocytes? Being in proximity to the bone-sections and the root of the milk-tooth, they are in unfavorable conditions for life, especially as regards the absorption of oxygen, the surrounding tissue-fluid being rich in CO_2 and poor in O. Moreover, they can only receive oxygen from one side; at the other is the tooth-tissue, which certainly has very little change of matter.

It may be imagined, that the leucocytes, being in such unfavorable conditions, change their nature, get other properties, begin to proliferate, at the expense of all the surrounding tissue, increase in size and change into giant-cells, which absorb what is left after the lime-substance has been removed.

PRINCIPLES OF ART AND PRACTICE OF DENTISTRY.*

BY GARRETT NEWKIRK, CHICAGO.

It would be impossible within the limits of a paper of appropriate length for a meeting like this to treat with anything like thoroughness a subject so great. I can hope only to present a few suggestive thoughts concerning certain leading principles and their application, as I trust, clearly and without error.

What is Art?

Webster defines the word as follows:

Art.

Latin *Ars*, *Artis*, Original Skill in joining or fitting—"From two Greek words, meaning to join, to fit together, to arrange—prepare."

(1) The employment of means to accomplish some desired end;

The adaptation of things in the natural world to the uses of life. The application of knowledge or power to practical purposes.

* Read before the Chicago Dental Society, Jan. 6, 1891.

(2) A system of rules serving to facilitate certain actions ; opposed to science or speculative principles ; as the *Art* of building or engraving.

NOTE.—Arts are divided into useful, mechanical or industrial, and liberal, polite or fine.

(3) Skill, dexterity, or the power of performing certain actions, acquired by experience, study or observation.

Among the synonyms are aptitude, readiness, skill, dexterity, adroitness, contrivance.

Considering the term in its broad sense, art is co-extensive with the development of the human race. The first man who made a hammer of stone, or strung a bow to send an arrow, fulfilled the definition of Webster—"The employment of means to accomplish some desired end ; the adaptation of things in the natural world to the uses of life ; the application of knowledge or power to practical purposes." We may say, therefore, that no man ever discovered a better method of doing any useful thing, teaching the same to others, without placing himself in relation with art, and contributing in some small degree to the world's progress. The man who does any one necessary kind of the world's work, however humble, in the best possible manner, taking into account the state of knowledge and the means at hand, has reached a fine conception of the principles of art, though he may be unconscious of the fact.

Wise old Æsop relates a fable of A Convention of Oxen :

The Oxen, once upon a time, sought to destroy the Butchers, who practiced a trade destructive to their race. They assembled on a certain day to carry out their purpose, and sharpened their horns for the contest. One of them, an exceedingly old one (for many a field had he ploughed), thus spoke : "These Butchers, it is true, slaughter us, but they do so with skillful hands and with no unnecessary pain. If we get rid of them we shall fall into the hands of unskillful operators, and thus suffer a double death : for you may be assured, though all the butchers should perish, yet will men ever want beef."

It was evidently in the mind of Æsop that there was art even in the trade of a butcher, and we will probably all agree with him.

In considering briefly some of the leading *principles* of art the first in order, I think, should be that of

TRUTH.

Art must represent truth. True art cannot be falsehood. The

greatest artist is he who has the highest conception of the truth which he attempts to represent on canvas if a painter, or in architecture, music, sculpture or literature. Even fiction, so called, must be true—true to human nature, to social conditions—to life. The so-called art intended to deceive, based on the false is a counterfeit, sure in the end of discovery and contempt. No work of art will bear the suspicion of insincerity. As untruthfulness makes an ineradicable blemish in the character of a man, so also with his work.

One of the most difficult tasks of the painter when his work seems well-nigh completed is to seek out and remove all small untruths. His finished work must not tolerate the least of them. How often do we see pictures, portraits perhaps of general excellence, yet with *something wrong*. We use the word instinctively—*wrong—not right*. There is somewhere lurking a *falsehood* in the composition. Possibly we may discover it but usually not, yet we are sure the false is there, and we are disturbed. Not all the truths of the picture can satisfy us against the unknown but somewhere lurking little lie, which may be in the slightest deviation of an angle, or length of a line or depth of a shadow.

It is said there is a young lady in New York, whose reputation for discovering points of defect in portrait work has become so general among artists that she is kept in constant employment by them for that purpose.

Whether it be in portraiture or landscape, architecture or design, poetry or song, speech or sermon, the great first question of the artist and the critic is, *Is it true?* Without multiplying illustrations as we might almost without limit, we will pass to the next principle.

BEAUTIFUL BECAUSE TRUE.

We instinctively admire truth. We intuitively perceive and love sincerity, in character and in art.

That which appears to us true we call beautiful. Our impression is of course according to our perception and knowledge. Judgment varies with culture, but this is the law—*The true is the beautiful*.

I have a friend who often says, "This is the beautiful truth." He is an earnest seeker after truths, and every one he discovers or sees in some new relation shines like a diamond to his admiring eye—so he says "The beautiful truth," and it is music to hear him say it.

We might apply this expression to all things we admire in art. It is the beautiful truth of harmony and measure in music ; the beautiful truth of form and color in painting, and the beautiful truth perhaps in the mind of the artist which his picture is intended to illustrate.

BEAUTY AND UTILITY.

The idea of art existing in the minds of most people, nine out of ten I think, is that of something purely ornamental—a luxury for the rich, far removed from the walks of common life. This is far from being the truth.

The primary idea of art was to make a thing of use. And it has ever been the second immediate object of every maker of useful things to please that sense of beauty which is found to exist in some degree even among the lowest tribes of men.

The principles of art are not limited to the production of things expensive. The cheapest carpet or wall paper may have faultless design and harmony of color. The home of an humble citizen may exhibit taste superior to that of some millionaire.

Many a poor man is living unconsciously in an atmosphere fragrant with art influences. They are around him in his home and the home of his friend, and on either hand in the streets where he walks.

To the receptive mind and soul the beautiful things of art as of nature are always present and in our large cities there are galleries open for the display of painting and sculpture.

Music is of art, and of *utility* beyond measure to all classes and conditions of life.

Books and Magazines are of art, often of the highest educational value.

The poorest children in our public schools, through the influence of their teachers, their books and the apparatus and furnishings of the school-room, are continually in touch with some one of the many hands of art, trying to lead them to higher aspirations and better lives.

All men are debtors to art, for the education they have received, and whatever is educational is of the highest utility.

It is not a vain thing for the architect to produce a beautiful design for the dwelling or the business block. He is a benefactor to every one who shall behold, admire, and go his way with one more beautiful image in his soul.

It is the province of art to add beauty to things of useful service that they may be truly appreciated. When we can only say of a thing, "It is useful," we are only half satisfied. We wish to say, "*It is useful and beautiful.*"

Who can stand near and look at a magnificent locomotive without a feeling of admiration and awe? It has in a high degree both requirements. We know it has great power for use, and we admire the beauty of its parts. It is the pride and pet of the engineer. Were it possible to reduce it simply to a thing of use, he would lose his affection for it; and even the fireman would hold it in contempt.

This principle applies to small things as well as great. An ax-helve is a useful article—the ax would possess little value without it. The most useful one I ever saw possessed the most beautiful form and finish, and was made by an old gentleman who had given much study, labor and experiment to the subject. It was truly a work of art—*useful and beautiful.*

Closely associated with and a necessary condition following the *truth* of Art is

HARMONY OF RELATIONS.

The productions of nature if undisturbed are never inharmonious, whether in sound, or color, or form; but they usually follow by series and succession—limited and determinate. Gold is gold, silver is silver in ore. Iron is iron—it is never steel. Steel and beaten gold are works of art.

The acorn produces the oak, the oak the acorn, the acorn again the oak, forever. But art carves the oak into a thousand beautiful forms and ten thousand articles of use. Man takes the oak and the iron and makes a ship or a dwelling, and the excellence of his art is represented by the sum of the harmonious relations he has been able to produce. Art takes the iron and makes it into steel, and of steel the roadway for a moving palace. In harmony with ductility and tension he makes a wire a thousand miles in length. By disturbing the atomic relations of this wire and its attachments in a definite way, he transmits intelligence and calls it telegraphy. This would be impossible without the most delicate perception of the harmonious relations of matter and mind and space.

The principle of harmonious relationship is universal to all art, but we think most frequently of it perhaps in connection with music. The developments in this direction are wonderful, almost

passing belief. A writer in the *Scientific Monthly* says he once heard Mme. Jonotha play a presto by Mendelssohn. She played 5,595 notes in four minutes and three seconds. Every one of these notes involved certain movements of the fingers up and down, and some laterally. They also involved repeated movements of the wrist. Therefore, there were at least three distinct movements for each note. As there were 24 notes per second, there were 72 distinct movements. Moreover, each of these notes was determined by the will to a chosen place at a certain time and with a certain duration. Therefore there were four distinct qualities in each of the 72 notes in each section. Such were the transmissions outward. All these were conditional on consciousness of the position of each hand and finger before it was moved, and in moving it the force of each touch. Therefore there were three conscious sensations to every note. So he concludes there were not less than 200 transmissions of nerve force inward and outward—to and from the cerebro-spinal centers—400 every second. During the whole time judgment was being exercised as to whether the music was being played better or worse than before, and the mind was conscious of some of the emotions which the music was intended to inspire.

We might pursue our illustrations indefinitely in regard to this law of harmony. It runs through all realms and everywhere. It applies equally to the goldsmith's work, the lawyer's brief or the minister's sermon. A lack of harmony in either case sadly mars it as a work of art.

Harmony is the quality lacking in the work of the celebrated (or notorious) Sam Jones, who erstwhile created such a furor in this city. He has remarkable powers, but his work is marred and destroyed by discords of nonsense and impropriety. I have seen and heard him when for twenty minutes he held the attention of five thousand people with an art which compelled admiration. Then suddenly and with no apparent reason he would descend to base caricature, spoiling the otherwise beautiful picture and grieving every finer sense of his hearers.

SIMPLICITY OF THE HIGHEST ART.

However intricate and complex art may be in any given direction, there is in the best efforts of the highest genius a disposition toward simplicity, the recognition of simple, central principles

to which all details are made subsidiary—In fact simplicity is a leading quality of the artist himself if he be truly great.

Sweeping aside the mass of accumulated rubbish, stilted forms and rules produced and obeyed by lesser minds, the truly great artist stakes his life work and reputation on the illustration of a few simple truths, or perhaps the representation of *one great thought* which he makes to shine like a star of the first magnitude in the firmament of knowledge. The greatest moral teacher of the world was the embodiment of simplicity. The art of moral teaching found its highest conception in the *Sermon on the Mount*. All the art of devotion is embodied in the simplest prayer ever formulated, by the same matchless author.

The highest art of patriotism found a complete expression in a few simple words spoken above the graves of our fallen dead at Gettysburg by Abraham Lincoln—a man whose greatness was equaled only by the simplicity of his character.*

So it is in the field proper of *art* as we usually take that word.

What is the *Angelus*, probably the most popular and valuable work ever produced on canvass? Is this picture really a great one? Undoubtedly it is, wherein does the greatness consist? The whole scene is of the simplest character. The people represented are of the most simple sort. The landscape is ordinary. The lights and shadows are those not uncommon to the close of a common day. Wherein then is this picture great, and why has the whole heart of Christendom been stirred with a quicker impulse because of it? Because it represents the simple action of a simple principle of the soul, manifested in the simplest way under circumstances which rob it of all suspicion of insincerity or formal motive; and a principle which appeals to the same, inborn in the soul of every beholder who fails not utterly to comprehend the story and its meaning.

Permit me time for one more and possibly a plainer illustration of this principle.

The art of writing extends back to remote ages: probably beyond all history or tradition. Written English has been almost contemporaneous with the spoken words; but penmanship as a

* As he closed, and the tears and sobs and cheers which expressed the emotion of the people subsided, he turned to Mr. Everett (the orator of the day) and grasping his hand, said: "I congratulate you on your success." The orator replied: "Ah Mr. President, how gladly would I exchange all my hundred pages to have been the author of your twenty lines." Arnold's Life of Lincoln, p. 330.

fine art worthy of the name has never existed till within recent years. The first master artist was P. R. Spencer, author of the system which has borne his name, and which all other so-called "systems" could do little more than imitate.

I well remember that in the common schools when I was a boy we had very little of art in penmanship. The teacher wrote a "copy," more or less legible and peculiar, at the head of each blank page. Perhaps one would be a "running" hand, the next a "round," others "long," or fine or coarse. Each of these the pupil was expected to imitate, and on the closeness of his imitation depended his marks for "penmanship." A consequence was the development of a composite style, representing nothing in heaven above or the earth beneath—a style which in some of us endureth even to this day.

Now a pebble may be called, perhaps, the most common and simple thing in nature. But the simple pebble has taught many a lesson and has often served for a great illustration. It is said Demosthenes became a great orator by the assistance of pebbles. David used a "smooth stone" out of the brook to terminate an argument with Goliath. Mozart said he had but gathered a few pebbles on the shore, while beyond was the great ocean of music whose depths he could never hope to fathom.

P. R. Spencer gathered pebbles and studied their forms. By natural, easy movements they had developed beautiful lines. He inferred that by a natural movement of a properly educated hand the pen should easily describe similar lines. He discovered the easiest, least tiresome position for the arm, the hand, the fingers and the pen. It was the simplest thing imaginable—the position in which any hand not previously *mis*-educated would most naturally fall upon paper for the purpose intended. He discovered furthermore with his pebbles that all letters were but compounds of two simple principles—the straight and curved line. For convenience, he divided the last named into two, right and left. Now, he argued that by a natural movement any pupil should be able to make graceful right and left curves, as graceful as those of the pebble. Having done this, he has but to combine them to form graceful letters and words.

Do not suppose that the effect of this simplicity would be to produce anything like a stilted or uniform style for all, and rob any one's handwriting of its individuality. On the contrary, it favored

its easy and natural manifestation and developed a series of beautiful forms before undiscovered, as various as those of the pebbles.

So I wish to repeat on the strength of these illustrations what I said a few moments since: "*There is in the best efforts of the highest genius a disposition toward simplicity.*"

INDIVIDUALITY.

A striking characteristic of all true art is that it is stamped with individuality. It is never mere imitation, or imitation with addition. Not only the work as a whole, but every part has something of this principle in its composition. It is the *individual* speaking through his work. His thought and life and soul are embodied in the product of his hands. His conception of form, color, harmony, truth and beauty are represented from the first stroke to the finishing touch of the brush, or chisel, or keys of the instrument. No art work is a mere reproduction of another piece of work or of anything in nature. No artist can imitate or reproduce all the details of a landscape. The lights and shadows are changing every moment. The scene is not the same absolutely during any two different hours of a lifetime. Neither can any mind grasp the scene as a whole with its multitudinous details, to say nothing of being able to retain them. The keenest and most retentive observer can but grasp a combination of effects. His accurate drawing or sketch is but the frame on which he hangs the drapery of his imagination. It is the truthfulness of his imagination appealing to the truth of other souls which makes them pause and look. It is the individualism of the writer or speaker which holds the attention of the reader or hearer till he shall be impressed with the thought and purpose behind the words.

How every paragraph of *Ivanhoe* is stamped with the individuality of the "Wizard of the North." How every page glows with his imagination! Yet how true a picture of life is hung in this slender frame of history!

And so we might illustrate to the verge of weariness by reference to such men as Handel, Mozart, Hayden, Mendelssohn and Wagner—each with a grandeur all his own—or to the peerless Michael Angelo or great Rembrandt.

Descending from stars to glow worms, we may say that scarcely a man in the world, performing skilled labor of any sort, can avoid placing in it something of his individuality. His closest imitations

will possess it, unless indeed he has become but a part of some great machine, like the maker of a piece of a modern watch.

A critic, familiar with one or more works of any prominent artist, will almost instantly recognize others, and will say "that is a Millet," or a "Turner," or a group in bronze by our own Mr. Taft. Are we not to learn from this that we are not to fear the exhibition of our own individuality, so long as we are honestly seeking to express our conceptions of truth in simplicity?

REWARDS OF ART.

The true artist finds his highest reward in the beauty and perfection of his work. No mercenary artist ever achieved a high degree of excellence or lasting fame.

To the true artist—painter, musician, sculptor, author, mechanician or designer—the hope of pecuniary reward is at most but an auxiliary motive. The best men in the past have as a rule, lived so far in advance of their time as to be unappreciated, and often unpopular while living. Through poverty, obscurity, neglect, want and persecution, they were loyal to their own high conceptions of the *truth*, finding their chief compensation in the consciousness of a lofty purpose and faith in the ultimate triumph of their principles.

Charles Churchill wrote a hundred years ago of the poverty of poets :

"What is't to us if taxes rise or fall ?
Thanks to our fortune, we pay none at all."

And Dryden :

"Rich was his soul, though his attire was poor."

Few great artists have not learned perforce the lesson of the apostle: "Having food and raiment let us be therewith content." And also this: "Ye cannot serve Truth and Mammon."

The great painter, Millet, lived half his life on a stipend of a few hundred francs, and made but little money by his work because he would not prostitute his art to the false taste, the fashion and popular demands of his time. He lived simply, yet happily; patiently, industriously following out his thought of a great truth, speaking in simplicity through his work.

He had no heart for

"The vain low strife that makes men mad,
The tug for wealth and power ;
The passions and the cares that wither life,
And waste its little hour."

It can never fail to be a source of regret to the fair-minded that so many authors of beautiful and rare things—books, paintings and statuary, which we all enjoy—should not have reaped a larger part of the pecuniary harvest to which they were honestly entitled. This thought alone is almost enough to force upon us the belief in a future world where the wrongs of this shall be righted.

The apparent wrong is not limited to works of art, but runs through all the commercial world. Time is necessary to determine nearly all great values. Many a man has held land in Chicago, living cheaply and paying taxes by the sweat of his brow, whose heirs or assignees are now rolling in carriages and clothed in pride, utterly forgetful of this same person and all his poor relations.

But we have great cause for thankfulness that the money rewards are not now so generally withheld as formerly from the artist himself to be bestowed upon the accidental possessor of his works.

Thanks to the arts of mechanism by which men travel easily and rapidly, the art of printing by which thought quickly interchanges, of telegraphy wherein lightening speeds the message, the general appreciation of things truly worthy is rising to a higher plane.

Charles Mackay wrote in 1812:

“ There's a good time coming,
We may not live to see the day,
But earth shall glisten in the ray,
Of the good time coming.”

PERTAINING TO THE ARTIST HIMSELF.

Conditions of Success. The artist must have an inherited tendency, a cerebral quality, a natural aptitude for the line of work in which he would succeed. This will usually be determined by the taste and inclination of the individual if he have a fair opportunity for choice. A special gift is generally evident in early life under favoring conditions.

The work to which the person is adapted is the work he will love. Loving his work he will be devoted to it, and almost certainly successful, provided he is properly directed from the start—because he should be educated with a constant view of the particular object to be attained. Following natural gift and inclination there must be patient study and preparation. None can afford to ignore the discipline of a thorough education.

The artist, musician, architect, painter, writer, needs to know the history of his art, its stages of development, the example and influence of its great minds; its established rules, and what by common consent have come to be considered essential and foundation principles. In addition to this is required a general knowledge of the conditions of life, of kindred arts and collateral sciences, to give scope and power to his own individuality.

His schooling is deficient if in addition to ideas and facts it fails to put in his hands and keep there from the very beginning, in daily use, that instrument through and by which all his success in life must be attained—*technique*. He must play with the keys till they belong to his fingers, in music. He must see with the edge of his chisel, in marble. His brush or his mechanical instrument must be of his hand, and very nerve and sense. Then he is equipped, and has a fair start in the race for excellence and reputation. With a love of truth and devotion to his chosen art, he may hope to attain a worthy place among the living and an honored name among the dead.

UNITY OF ART.

It seemed a strange idea when first advanced, that all force should be scientifically considered as a unit; that light, heat, electricity, chemical action, were links of one chain and might be interconvertible. Art has the same unity. The spirit of each is the soul of all. They but seek to express in different ways something of the truth, beauty, use and harmony of the universe.

We acknowledge this unity by the terms we use interchangeably, as when we speak of the "tone" of a bit of coloring as though it were music; of "warmth" as though it could impart heat. We speak of the height and depth, grandeur and sublimity of music as though it were a throbbing ocean or majestic mountain landscape; or we speak of its "soul" as though it were some being endowed with divine life.

It has been a matter of common experience that the knowledge and technique of any art would assist in the study and practice of another. For example, to mention but one, the principles of form, size, proportion and perspective involved in *drawing*, are applicable to all constructive and manipulative art. And the deeper principles I have attempted to name and briefly illustrate, apply not only to these, but all the useful activities of human life.

PRACTICE OF DENTISTRY.

That this is an art, bearing a close relation to many arts, in its highest development based on principles common to all art is without question. If in following the foregoing lines of thought suggestive ideas relating to our profession have not occurred to you, I have failed of my intention.

A paper of many pages could be written on the practical application to dentistry of the principles I have briefly set forth, but in the limited time I have had for the preparation of this paper, I have found it impossible to develop the subject as I would wish, and I have thought best to leave it for development by discussion. Permit me, therefore, to close with merely a few suggestive questions:

1. How, in your opinion, do the principles of truth, beauty, utility, harmony, individuality, rewards, devotion, &c., apply to dentistry and the dentist?
2. What forms of art are nearest to dentistry?
3. What study of technique elsewhere, either as a part of preliminary education or as an exercise collateral to practice, would be specially useful to the dentist?
4. What would constitute a truly artistic dental service, either strictly "*operative*" or *prosthetic*?
5. Do the principles enumerated have a practical bearing on the life, the moral and professional conduct—are they related to the making of a gentleman?
6. Are there any principles I have not mentioned which should be named in this connection?

I hope many valuable thoughts will be added by the gentlemen present to the few I have presented.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

Regular meeting, January 6, 1891, President, Dr. C. N. Johnson, in the Chair.

Dr. Garrett Newkirk read a paper on the "Principles of Art and the Practice of Dentistry.*"

DR. A. E. BALDWIN, in opening the discussion, said: I feel that I should be derelict in my duty if I did not rise to commend Dr. Newkirk's excellent paper. We all should commend it. I cannot discuss the paper, not being sufficiently artistic to discuss it properly. The paper will do us all good, because it will teach us to think in lines that will broaden and benefit us. Such a paper gives us texts for elaborations not only in a society like this, but at our homes for daily work. I think there is not one of us who have listened to the paper to-night but will go home with ideas that will be of some advantage to him in his work.

DR. W. J. BRADY: The subject of art in dentistry is one that is very interesting to me and almost always brings me to my feet. In the first place I wish to commend the paper. It is a treat to me to hear such a paper, and I cannot pass it by without expressing my admiration. In answer to some of the practical questions that have been asked by Dr. Newkirk, I think something can be brought out which is of advantage to us. Does it ever occur to us that we are artists—or should be in many other ways than we usually suppose? We do not hesitate to class the sculptor or portrait painter as an artist, yet do we not have as much to do with moulding the human face as the portrait painter or sculptor? Every day we do. Every time we operate upon even a single tooth we add to or take away something from the beauty of the face. The principles of proportion, expression or beauty are the same, whether applied to portraiture, sculpture or dentistry. Every time we change a single line of the contour of a face we add to or take away something from the form or expression of that face. When all the teeth are lost and we make artificial substitutes, how much we need to be true artists. When we regulate teeth and perhaps remodel the entire face, changing it entirely in its appearance, as often in the case of children, how much we need artistic training.

* See page 90, current number of the DENTAL REVIEW.

This thought brings us to the leading question :

Do we receive, in our dental colleges or elsewhere, education in this direction ?

Do we have any department in our colleges or societies devoted to the principles of art in its relation to dentistry? Have we any books on the subject? Very few, indeed, and containing very little then. Now, it is possible to reduce to order all this which is at present in a state of chaos, so that any one who understands it may teach it to any one who is capable of understanding how to add to and how to take away, and any one who has any artistic conception may be able to see clearly the same thing that the teacher does. It may be taught just as systematically as we teach addition, subtraction or division. I believe that something of this kind should be added to the course of our colleges in this country. So far we have had but little of it, and we need more. It could be made a feature of our society work by a short course of lectures, and by the use of some of the late improvements in photography and projecting lanterns it could be elaborately illustrated, and be made very entertaining as well as beneficial.

DR. A. W. HARLAN: One of the reasons that I wanted to say something in commendation of this paper was the fellow feeling. I sometimes inflict an audience with long papers myself, and of course the author always knows that the paper is thoroughly appreciated when it is not discussed. But in the case of Dr. Newkirk, he does not have that feeling, so I feel as though his paper ought to be discussed. I will just discuss one phase of it. One of the things that ran through my mind most when he was reading the paper was this, that if you be true to nature, as a dentist, and if you are practicing dentistry by dividing it into some particular field so that you take one part of the subject, and you chose the field of operative dentistry, the very best argument I have heard in favor of representing nature or being faithful to her, would be to contour your teeth. A little while ago a discussion took place in this society where some views were expressed with reference to making the contiguous surfaces of the teeth flat, and contour, etc. It has been my pleasure in the past five or six weeks to have had several persons visit me, who have had at different times contour fillings made, where previously great separations between their teeth existed, and their gratification was expressed by the feeling of comfort and satisfaction and increased usefulness in those re-

stored teeth. And so I concluded to-night, after listening to Dr. Newkirk's paper, that if I wanted to be a true artist, or even felt in my own soul I wanted to be a good one, it will be my endeavor in the future as far as possible, whenever I attempt to fill a tooth with gold, tin, amalgam, or any hard cement, to try and imitate nature.

Now, I do not know of anything that will make the whole human race more happy and content and give them good digestion, ease of mind and conscience than to have their teeth properly shaped, so that they will not be a perpetual source of annoyance to them. If I have learned anything myself, it is that I shall try to be faithful to that idea in making myself an artist in that direction.

DR. ALLPORT: The essay of the evening is in many respects a remarkable paper. It is scholarly and unusually broad. It is applicable to every department of art, as well as to mechanics, to law, to every specialty of medicine, to the teaching of Divine Truth, to God Himself, the source of truth, whose works are ever beautiful in their harmony. It cannot be too highly commended for its high moral tone, as well as for the plea it makes for true art, so applicable in the practice of dentistry. But, while art should be cultivated and given great prominence in our calling, the fact that teeth are for mechanical purposes should not be ignored, and art in dentistry should not be forced in defiance of mechanical principles.

At a previous meeting I expressed myself as opposed to the universal and extreme practice in contouring of fillings, for which there seems to be, just now, a craze. I then took occasion to refer to what I considered the unfortunate teaching and practice of the late Dr. Webb in this class of operations. I should not again refer to the matter, and especially to Dr. Webb, but for the remarks just made by Dr. Harlan about what I have denominated extreme practice in the full restoration of all teeth where the approximate surfaces have been broken away. I did not then, nor do I now, oppose full restoration when there is unquestionably strength enough in the remaining portion of the tooth to hold the filling. Many of our dentists are now teaching and practicing the entire restoration of the natural shape of teeth that, in my judgment, are too frail to long retain the fillings. It is this practice that I oppose, for it is misleading and tends to unsafe results.

The leverage force in the pressure of mastication upon the ex-

treme edges of many of these fillings is so great as to sooner or later force them from their inadequate moorings. No one could have been more justified in attempting this class of operation than Dr. Webb, for he was one of the most delicate and skilful manipulators we have had, and upon whatever he did was left the impress of an artist. But I must reiterate what I said last month, that from what I have seen, as well as from what I have heard of this class of his work, the operations have not been as permanent as we have been led to suppose. Feeling that I had possibly done him an injustice in what I said and wishing to correct it if I had, I wrote to a well-known dentist in Pennsylvania who had known him throughout his whole professional life, and whose honesty and intelligence no one can question, and asked him to give me an unbiased opinion as to the correctness of my remarks, as published in the December number of the REVIEW, in regard to the durability of Dr. Webb's operations. His reply was: "You have said the right thing. I saw much of Webb's work, and I saw a fearful waste of time and strength ending in his death, a martyr to his own wrong ideas." Then, in substance, he says: "It is the report of my friends here and there that Webb's work is not wearing, etc. There is no use disguising the fact that Webb's life, both to himself and to his immediate followers, was a mistake." I was glad to receive this letter, not that it placed Dr. Webb's work in an unfavorable light, but because it made me feel that I had not done him an injustice. Contour fillings are artistic and are allowable when not carried beyond certain limits. Mechanical principles are against the practice, therefore contouring should not be carried to an unsafe limit mechanically.

It is in Prosthetic dentistry, however (the making of sets of artificial teeth), rather than in the treatment of the natural organs, that the dentist has the greater field for the use of art. It is for him to so construct substitutes for the natural teeth that they will harmonize with the works of the Creator that surround them, and be so true to Nature in size, shape, color and position that they will not produce discord in the facial expression. There is an individuality in everything that God has made. There are no two blades of grass, no two flowers, two faces, two eyes, nor are there any two sets of teeth, that are in all respects alike. They may be similar in type, but not in detail, and it is this detail that gives the specific individuality by which we are enabled to tell one from the

other. Between these details there is a harmony that makes any one part a fit companion of its surroundings. Any important change in any of these details would—to the extent of the change made—alter the individuality of the original. As there are no two things exactly alike in Nature, there can be no exact rules by which anything in nature can be imitated. There are, however, certain rules which may be aids in producing general outlines, but it is the soul and feeling of the artist that works out the details which gives life to the substitute. A mechanic, pure and simple, may construct a set of teeth and make them serviceable to the wearer, inasmuch as they will fit and be strong and useful in mastication. But only he who has the artistic feeling will be able to select his materials and so adapt them in the mouth that they will harmonize with the complexion and anatomy of the face and be true to nature. From infancy to old age there is harmony in contour, as well as in color, and there is change and adaptation of one to the other at every stage of life. The hair that would be becoming to a girl of sixteen, would not be suited to the same person at sixty. Hence nature changes the color of the hair to be in keeping with the face as age advances. The same is true of the teeth; all change and grow old together, and there is beauty in age only as there is harmony. To attempt, therefore, to make the face look younger or more attractive by making any one part of it appear younger than is natural, is a great mistake, for the other parts suffer by an inharmonious contrast which always unpleasantly attracts attention.

In applying this idea to the selection and adaptation of artificial teeth, it will at once be seen how very important it is that he who gives his attention to this branch of dentistry should not only be a good mechanic, but should possess that art feeling that will enable him to appreciate the importance of physical harmony. If he does not possess this quality, he will be a mechanical dentist only. His work may be useful for mastication, but the face will be apt to look "*toothy*." To produce this appearance the teeth need not of necessity be too large for the face. In fact, artificial teeth are usually smaller than were the natural, and yet they give the appearance of which I have spoken—as it is usually the inharmonious color, rather than the size of the teeth that is at fault. The first, as well as the most lasting, impression made upon the beholder of the individual, will be the teeth, whereas they should be so

thoroughly in keeping with the rest of the face, that they will attract no more attention than any other feature.

For these reasons I have long advocated that prosthetic dentistry should be an independent calling, and I contend that one of the prerequisites to the study and practice of this specialty is a talent for and a knowledge of art. The proportion of good artists who could have made good mechanics is very large, while the proportion of good mechanics who could have made good artists is very small. A person may have great mechanical ability, but little or no artistic sense. There are few dentists who have any idea of proportion or feeling for color. This is why we see so many mouths filled with abominably unnatural looking artificial teeth, and this condition of things will never be greatly improved until more attention is given to art in this department of practice. It would be useless to attempt to develop this talent in every dental student, for probably not more than one in twenty-five, or perhaps fifty, could respond to the demand, should they be encouraged to follow dental prosthesis as a calling.

Artistic ability, therefore, should be among the first requisites to the study and in the practice of prosthetic dentistry. It would be far better for those who engage in its practice to have acquired a theoretical, as well as a practical knowledge of the leading ideas of proper proportions, modeling, drawing and harmony of colors, rather than to have studied so much of medicine as is usually taught in dental colleges, a knowledge of great use to the dental surgeon, but of very little use to the maker of artificial teeth.

DR. G. S. SALOMON: I would like to say a few words on this subject. The remarks made by the preceding speaker entitle me to the floor to answer some of them, although not quite on the subject treated by the paper. We cannot be dentists unless we have more or less artistic taste; unless we use judgment in our work, and judgment, of course, is one of the requirements of an artist.

Dr. Allport has alluded to the contouring work of Dr. Webb as giving out; that his life-work has, to a large extent, been a failure. That may be the opinion of one man, but many think with me that Dr. Webb has been the ablest artist we have ever had in dentistry. I think he will never be surpassed in operative dentistry.

Marshall H. Webb, during his lifetime had many professional contemporaries who were envious of his reputation and skill; they would shrug their shoulders and say, "Yes, he is a good operator,

but that is all ; he knows nothing of prosthetic dentistry ; he does not know how to treat teeth." But, gentlemen, this is not so ; Webb, when a young man, did nothing else but mechanical work for other dentists of the town, and he was an expert at that before ever becoming famous as an operator.

I have seen many of his operations. In the first place, he has been dead for fully eight years. One or two years before his death he had done no work on account of ill health, consequently the work that has been done by him is ten or more years old. All of his work was done from ten to twenty-five years ago. Any of our work may give out in that length of time. If our work lasts fifteen or twenty years we are generally satisfied, but much of Dr. Webb's work of that time is still intact. I think Dr. Webb stands at the head, having done the finest contour work that has ever been performed.

About a year and a half ago a dentist died in the city of Reading, Pennsylvania. He had the finest piece of operative dentistry in his mouth that was ever performed in this or any other country. That work was described in Dr. Webb's book, and was done in 1876-7-8, and some of it in 1879. I saw the work six years before he died, and it was just as fine then as when it was inserted. It looked as though it had been polished the day before.

A dentist in New York City has two teeth in his mouth that excited the admiration of the English dentists when he was in England in 1878. The work was done, I believe, in 1876 or 1877, and it is described in Dr. Webb's book. The enamel was standing ; the teeth were filled with gold, and not a crack was visible ; it seemed nearly as thin as a piece of tissue paper. The English dentists could not understand how he placed the piece of enamel in front of the teeth and thought it had been inlaid. I was told not long ago that these fillings were as fine to-day as ever. This conclusively shows that Dr. Webb's professional life has not been a failure, and I do not think it has been a failure in other directions. He did not die a rich man. His life was a failure—if failure it may be called—in that respect only ; but as far as his work is concerned, no one can say anything against it. I had the good fortune to be with him at Lancaster for some time. I also assisted him during my time at college at his office in Philadelphia. I have seen him operate on many occasions, and I was thoroughly acquainted with him and his work. I shall not try to argue with Dr.

Allport on this subject, but the young men present will naturally think that Dr. Allport, being so much older than I am, ought to know which work will be the most beneficial—contour work or flat filling—and upon them I want to impress this, that Marshall H. Webb's art of filling teeth has stood the test of time, and will stand the test if teeth are properly prepared and the fillings skillfully and artistically inserted, that this class of work will give the best satisfaction, Dr. Allport's statement to the contrary notwithstanding.

DR. ALLPORT: I was not speaking against Dr. Webb's skill as a manipulator; on the contrary, I gave him credit for having been one of the finest operators in the world, and yet with all of his skill, his extreme practice in contouring has not been the success that the reports from dental societies would lead us to suppose. Nor have I advocated what Dr. Salomon calls flat fillings in preference to contour fillings, as one might suppose from what he says. So do not misunderstand me, gentlemen, as not believing in contour fillings, for I do, to a safe extent, but to carry the practice to the extreme, that some are now teaching and practicing, I believe to be wrong. My judgment, as well as my observation, teaches me that many of these extreme contours have been built upon foundations too frail to insure long stability, whereas, teeth decayed to the same extent and equally frail, where the margins have been perfectly protected when filled and strengthened by the overlapping of gold and contoured to a less degree, have usually been far more lasting and serviceable than have those artistically restored to their original shapes.

DR. SALOMON: If the principle of contouring is wrong—and Dr. Allport says it is—we may as well dispense with art in dentistry entirely. If any man in practicing prosthetic dentistry finds himself unable to make an artificial set of teeth, he had better fill teeth and stick to it—it is easier to put in fillings, and it does not require artistic taste. It does not prove that the work of Dr. Webb was a failure because Dr. Allport says it was. I say, gentlemen, some of the fillings that Dr. Webb put in twenty years ago are good to-day, which conclusively proves that his life-work was not a failure.

DR. GARRETT NEWKIRK, in closing the discussion, said: I asked some questions which have not been touched upon. What would constitute a truly artistic dental service strictly operative or prosthetic? I do not think any one has reached the core of that question

yet. I will suppose one example. Here is presented a beautifully contoured filling. It has an artistic finish, and would seem to be a work of art. Now, in nine cases out of ten would not that cover the whole ground in the mind of the observer? He judges by the outward appearance only. He does not go to the core of the matter at all. The operation from the beginning, including every stage of treatment, must be true to the highest and best that is known to us—true to right principles. If with a pulpless tooth, it is not a truly artistic operation unless the pulp canal has been treated antiseptically, and filled as nearly perfectly as practicable, and the cavity prepared properly for the filling. Then it is not artistically perfect unless every piece of gold is so thoroughly adapted that the filling is consistent and practically perfect throughout. It is or should be the aim of the dentist to so restore the parts as to conform to the truthfulness of nature. God Almighty knew how to make teeth, and there is philosophy in the whole thing, if we had sufficient time to go into it. The point made by Dr. Black regarding the inter-proximal spaces is an important consideration in this connection, and it was one of the things that God had in his mind when he made teeth.

An operation is not truly artistic unless, as in the illustration given in the paper, from the first touch of the instrument to the final stroke thereof the work has been consistent with truth, beauty, harmony and utility.

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LIGHT.

Too little attention has been paid in the past to the regulating of light for the operating dentist. Many times we have been surprised on entering an operating room to find cross lights staring the operator in the face, and at other times we have noted the fact that there was too much light for comfort or necessity. Within the past year two papers have been presented to dental societies on the management of light—one by Dr. A. O. Hunt, of Iowa City, Iowa, before the Iowa Society last May,* and the other by Dr. T. W. Brophy, of Chicago, before the Odontological Society of Chicago. (We hope soon to publish the latter in full). Without further reference to these papers, both admirable productions from different standpoints, we desire to call attention to a paper published in the transactions of the American Dental Association for 1887, written by Dr. J. N. Farrar, then of Brooklyn, N. Y., but now of New York City. From a careful reading of the latter paper, we concluded that the following was about the best method of regulating light: First. No matter whether the light comes from the east, west, north or south, it must come from the sky, that is, not through tree tops, climbing vines, or by reflection from a building across the street. Second. It must be excluded at the bottom of the window by a dark screen or curtain, so that the light will strike the person in the operating chair two or three inches below the chin. Third. The chair must be so placed that the operator will

*See September number DENTAL REVIEW, 1890, page 604.

not cast his own shadow on the work being done, nor must he allow the assistant to so stand as to exclude the light. Fourth. If there are other windows to the left or right of the operator they must be curtained, so that no cross lights will affect the eye. Fifth. The instrument case must be of dark wood and the bracket table should have no mirrors on the sides, nor should there be a mirror, or other silver, gilt, or dazzling object at either side of the window to reflect light in the operator's eyes, unless it be directed on the patient's face. Sixth. Dr. Gilmer, of Chicago, suggests that the towel or napkin which is spread over the patient's clothing below the chin should be of some dark material, maroon, brown or black. Dr. Cushing adds that the walls of the room should be painted or papered dark brown or black, without any gilt. Dr. Gardiner adds that the temperature of the room should not be above 66 to 68 degrees Fah. in winter, which is an excellent suggestion. Finally, if the eye must rest on something pleasant from time to time, a dark vase filled with flowers, or plants in pots that are painted black, or pictures with dark wooden frames may be disposed about the room with profit.

Any further suggestion from our readers will be gratefully received.

THE DISCREPANCY BETWEEN THEORY AND PRACTICE.

In almost every phase of human experience we find a discrepancy—or perhaps we might better call it a disappointment—between theory and practice. At least we are never quite sure of a theory till it has been proved by actual demonstration. The political policy of a McKinley, the single tax scheme of a Henry George, the prophetic visions (we came very nearly saying vagaries) of an Edward Bellamy, and even the ponderous logic of a Gladstone are worth not so much as the paper on which they are written for definite results till brought face to face with this one last crucial test. And the misery of it is that many of the theories of our brightest minds halt, stammer, stumble and fall when reduced to practice. It is one thing to evolve a theory in the mind; it is quite another thing to work it out with the hands.

The charge is often made that the present age is too practical, that we are inclined to give no quarter to theories unless they can instantly be made productive. Theorists and sophists have little sympathy with the hue and cry for results which forms the burden of

the people's prayer in the latter part of the Nineteenth Century, and possibly they are in a measure justified. We are quite willing to admit that a practical age is not conducive to diversity of opinion or to liberality of thought; that the imagination is curbed and the softer graces of the human intellect—the flights and fancies—give place to cold and unrelenting facts.

But if we are too practical to-day, we can logically lay the blame very close to the door of the theorist of the past. Had the world not been flooded a decade or two ago with a mass of literature made up for the most part of the vain imaginings of a lot of wordy visionists, the present decade would not have demanded so rigorously "the proof of the pudding." Humanity is at best an aggregate of extremists, and is either high up or low down on the seesaw of sentiment. Just now the practical end of the plank is soaring toward the heavens, and the time must soon come when the balance will begin to swing the other way.

This is an age of industrialism, and no other one calling has reaped greater returns than dentistry. For what is true of the world at large is also true of our own profession. The discrepancy between theory and practice in the past has led us to test everything in the operating room or laboratory before we pass judgment on it, and the result is that we have advanced rapidly in manipulative measures, and have brought the mechanical aspect of dentistry to a state of perfection never before approached.

But there is one fact suggested by the present state of things that must not be lost sight of. It is hardly safe to claim that because we are not able to make practical use of a theory that the theory must necessarily be of no benefit. The truth is that a theory, incapable of demonstration, is often of value through its suggestiveness. It is our fate to arrive at results in many instances by the most devious and roundabout methods, and a seemingly useless theory may often be a link in the chain—it may be a piece of the roadbed on the circuitous route to success. So, in view of this, we must be cautious of decrying theory.

And because we do not succeed in the application of a theory laid down by some one else, we must not suffer our presumption to condemn the theory. We may be—and most likely are—faulty in our application. The author of the theory very probably would show us a discrepancy in our demonstration, where we are trying to claim a discrepancy in the theory. A man may tell us through

the journals or in a society of a process of treating abscesses by means of a certain drug and may give his theory as to the action of that drug. We go to our operating room and try the drug on the first abscess that presents and we fail to cure it, and immediately we lose faith in the drug, the theory and the man. This is not justice, for we are never quite sure that we have faithfully followed out all the requirements of the process.

Often do we hear the remark made of a man who may be eminent as a writer, that he is not practical. This is always used in a derogatory sense, as if not to be practical were not to be useful. Our intensely practical man forgets that there must be some theory back of every operation he performs, and in point of utility it would surely seem that the man who reasons out a logical process of working is equal to the man who does the work.

But, as before intimated, the practical men in dentistry have in a large measure been led to their common distrust of new theories from the fact that many have been foisted on the profession without due deliberation and without a good and sufficient reason for believing that practical benefit would follow their application. Our writers and speakers should weigh well their ideas and prove over and over again the truth of their theories before they bring them to the profession and ask their acceptance.

C. N. J.

A COMMON DEFECT IN THE PREPARATION OF PROXIMAL CAVITIES.

In a molar or bicuspid, where the cavity extends from the proximal to the grinding surface, and where decay has involved the dentine in the direction of the cusps, the orifice of the cavity is often left too narrow. That is, the enamel is not beveled away enough at the point where the proximal surface joins the grinding surface. As left by many operators, the outline of the border of the cavity from its proximal aspect resembles somewhat the shape of a horseshoe. To follow the outlines of a properly shaped cavity the ends of the horseshoe would have to be bent outward, leaving a larger orifice. There are several objects to be gained by opening up these cavities. It admits of better access in manipulating the filling material, and the enamel margins at this point are better protected by the gold. A sharp angle of enamel, such as we often see, will almost invariably be broken down by mastication and a leakage established between the filling and the tooth. If the enamel is

dressed well away and properly beveled this will not occur. Then again it leaves a broader surface of filling material and brings the line between enamel and filling farther from the adjacent tooth, so that if the filling be properly contoured, deleterious agents lodging between the teeth will come in contact with the filling instead of the enamel borders.

The most efficient means of dressing away the enamel is by the use of sandpaper disks in the engine. In this way a rounded, smooth, and perfectly polished margin may be given the cavity.

In proximal cavities in the anterior teeth we often find defects of a similar nature. A sharp corner of enamel is often left in that portion of the cavity nearest the cutting edge. Where the labial or lingual wall of the tooth is involved, the cavity is often shaped as if a bullet had gone between the teeth and cut out a half-moon from the proximal surface. Instead of this rounded outline the cavity should be given an oval outline, the enamel being trimmed away and beveled toward the cutting edge and neck of the tooth. If this be done, the gold will protect the thin enamel plates near the cutting edge, and prevent a crumbling of the margins, which we quite frequently see around these bullet-shaped fillings.

The same rule holds good as with posterior teeth that there is less liability to recurrence of decay if the proximal surface of the filling be made broad, so that the line between tooth and filling is kept away from the adjacent tooth. To trim the enamel margins in anterior teeth probably the best method is to use a sandpaper strip, or, better yet, the strips recently placed on the market made of thin linen, sanded on one side.

C. N. J.

LANCING ABSCESES.

The lancing of the gums for the relief of an abscess, pyorrhœal sac, dentitio difficilis, or the relief of any other inflammatory condition is not as often necessary as many dentists, but especially physicians are inclined to practice it. For the relief of temporary teeth during eruption, the lance should not be resorted to until in the careful judgment of the observer, symptoms inclining to seriously derange the nervous system begin to appear. Of course it is taken for granted that the dentist or physician who lances a child's gums for the relief of pain caused by an erupting tooth, knows just exactly *where* and how it should be done. We have

recently seen a case in which a physician lanced the gums about one-fourth of an inch distant from the point where the tooth was erupting.

It is true that often immediate relief follows days of suffering when the lance is applied, but it should be remembered that if the same thing had been done on the first day of the siege, instead of relief probably an increase of suffering would have been the result. The lancing of an acute abscess, unless done exactly at the right time, often is followed by severe inflammation which is entirely unnecessary. Many abscesses can be relieved by other means if we take more time to do it. As a rule if the lance is resorted to at all, it should be plied quite freely, or not at all, this is especially true for the relief of erupting third molars. Use the lance, but know exactly when to use it, and then use it carefully but vigorously.

DECIDUO-PERMANENT TEETH.

We are often brought face to face with a case in which one or more of the temporary teeth are retained in place long after they should have been shed. This is least frequent with the central incisor, occurs oftener with the first temporary molar, second temporary molar, lateral incisor and cuspid, in the order named. When any of these teeth are found in the mouth, even if partially loosened, unless there are good reasons to expect that the permanent tooth will succeed upon the extraction of the temporary, it is better to suffer it to remain. They are sometimes retained through life, and are often seen in persons at thirty and forty, though it is true that many are lost between twenty and thirty. Not long since we saw an instance in which a dentist extracted two temporary cuspids in a young lady of eighteen; but as within two years the permanent teeth did not erupt artificial substitutes had to be made. Fill and save these teeth, and by the judicious grinding away of the antagonists relieve them of a part of the burden of mastication.

GUTTA-PERCHA AS A TEMPORARY FILLING.

The longer this material is used, the more numerous are the opportunities presented for the observation of its good qualities as a temporary filling material. It is certainly preferable to the

cements, which were more commonly used a few years ago. For pressing the gum tissue away from the margins of a root to be prepared for crowning, it is absolutely unexcelled. A part of the gutta-percha having been worked into the root canal, a piece nearly the size of the crown of the adjoining teeth is worked into place on and around the root, whose margins are covered by gum tissue, by means of a figure-8 ligature passed around the adjoining teeth, the gutta-percha may be tied into place. The gradual pressure of the ligature upon the gutta-percha causes the gum tissue to recede and in a few days the margins of the frail root can be distinctly seen and operated on. The material seems to be kindly tolerated by the tissues, and as a rule the gums are not only pressed out of the way, but are much harder and do not bleed so readily. Where one or more of the adjoining teeth are wanting, the method suggested by Dr. Chupein, of placing a common tack into the root and working the gutta-percha about the head of the tack, pressing the latter against the exposed part of the root, yields admirable and satisfactory results. As a temporary stopping for the retention of medicaments in contact with a living pulp, when used in the form of a thick chloroform solution on cotton, it will be found easily applied, less irritable than sandarac varnish and cotton and remain clean and pleasant for a longer period. For pulpless teeth during treatment, on account of the readiness with which it can, at one and the same time, fill a cavity and still have a vent-hole, it is preferable to anything else. Other cases where its services seem indispensable, are those in which there are two approximal cavities in adjoining teeth, by filling these with one mass of gutta-percha and allowing it to remain several days, the cavities are kept clean, the gum is pressed out of the way gently, yet firmly, and without injury to it, and generally sufficient space for operation is also secured.

THE DENTAL MEETING OF 1893.

Perhaps not again in the history of the present generation of dentists will there be such an opportunity as that offered by the great meeting to be held in Chicago from August 30th to September 10, 1893. The opportunities offered by gatherings of this kind, for the display of social courtesies, for the formation of new professional friendships and the strengthening of old ones, but above all for the exhibition of the social, moral and professional condition

of the members of a profession and for the presentation of the original labors of those resident in the country where the meeting is held, are unparalleled. It seems a long time within which each of us can prepare something worthy of the man and the circumstance, and yet it is not too soon to begin the study or investigation of some line of inquiry, to gather the material for some clinic or paper, discussion or essay, it is not too soon to be laying the foundation, drawing the plans and arranging the details for a systematic evolution of some unsolved or obscure point bearing on our daily professional life. The opportunity for the dentists of the West especially is a grand one. They will exceed in numbers and they should not allow it to be said that they have not contributed in proportion to what they have received.

It is but two years and a half when the meeting is to be held, a length of time which we all know is not too great to thoroughly investigate or practically prove some doubtful theory or method. If we were to attempt to enumerate what can and should be done, we would be certain to fail, and we must satisfy ourselves by merely suggesting a few of the many things that we would like to know. The study of bacteriology—with due appreciation of what has been done—may be likened unto the great African forest, still dark and dense, beset with many uncertainties, unexplored. What a field for those who love the mysterious! What a bottomless ocean! Still in two years and six months what might not be accomplished? Tell us what this simple green stain on the teeth *really* is; not what you *think* it is. But what is it? Erosion? Oh, yes, we think we know what it is said to be caused by, how it is supposed to originate, etc. But tell us what and why it *is*? Tin and gold combined is said to have a therapeutic effect; some say yes; some whose judgment is just as good, say no. Which is true? Copper amalgam offers endless opportunities for investigation. The effect of medicated fillings on diseased pulps. The dental pulp, whose capping we so well understood a few years ago, but whose behavior under many conditions we do not quite comprehend, offers unlimited opportunities for further investigation. The method of attachment of transplanted or implanted teeth, the origin and causes of anomalous formations, all invite the studious and inquiring mind to activity. Who will give us the universal nomenclature? What of the true action of many of the drugs used by dentists? These are but a few of the many things we would like to see accomplished.

Who will begin to lay the foundation for the solution of these problems at once? If you do not let the leisure moments pass, the Columbian Dental meeting of 1893 will not be wanting of success.

A JOURNAL REVIVED.

We take special pleasure in announcing the fact that the *Archives of Dentistry*, which was discontinued with the December, 1890, number, has re-appeared, with Dr. John G. Harper, as editor. We wish the *Archives* and its new editor much success.

ILLINOIS STATE DENTAL SOCIETY.

The arrangements for the meeting of the Illinois State Dental Society to be held in Bloomington, beginning on the second Tuesday in May, 1891, are progressing favorably and one of the best meetings in the history of the society may be confidently expected. Under the new régime, which disposes with all miscellaneous business by delegating it to a council, there will be sufficient time for clinics, essays and their full discussion. The dentists of the State of Illinois, and those in adjoining States should not fail to make arrangements to attend.

CHICAGO DENTAL SOCIETY.—EIGHTH ANNUAL BANQUET.

The eighth annual banquet of the Chicago Dental Society, given at the Wellington, on Tuesday evening, February 3d, was one of the most enjoyable occasions in the history of the society. The tables were elaborately decorated and the menu beyond criticism; the good cheer and fellowship prevailing was characteristic of the new era entered upon by the World's Fair City's dental fraternity. There were a few less than one hundred feet under the double T-shaped mahogany, many of them occasionally keeping time with the beautiful Spanish soothing airs of the orchestra. The president, Dr. Johnson, acting in the capacity of toastmaster, with happy jests introduced each speaker in his turn. The Rev. Jenkins Lloyd Jones responded to the toast, "The Correlation of the Professions;" he was followed by Judge Joel M. Longenecker, of anarchist trial fame, on "The Legal Profession." Mr. Elwyn A. Barron did justice to the subject, "Literature," in a scholarly oration, replete with flowers of rhetoric. "The Press" was responded to by Opie P. Read (Arkansaw Traveler) in that happy, humorous

and droll vein which has made his name and fame known throughout the land. To the toast, "The Medical Profession," Dr. Fernand Henrotin replied, while to that entitled "Dental Surgery," Dr. W. W. Allport replied in that masterly way and with that meaning twinkle which we all know so well.

Something of the pathos which is in each man's heart, all perceived when Dr. Geo. H. Cushing made his response to the toast, "Presidents of ye Olden Times," and his reference to some who have gone before—who are permanently absent—brought to remembrance some who were temporarily absent. Of these, Dr. Koch, whose presence in Springfield was imperatively necessary; and Dr. Harlan, who was in Europe, sent congratulatory messages. Near midnight, amid the strains of Edgar Allan Poe's noblest stanzas the pleasant company dispersed, trusting soon thus to meet again.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.—THE VETERANS' DINNER.

NEW YORK, January, 1891.

To the Editor of THE DENTAL REVIEW:

DEAR SIR—January came in with a "nawsty" storm. New Year Day enthusiasm all under water and not safe for pedestrians of uncertain step. When we came to New York thirty years ago, then thirty years of age, there was a fad for calling on one's friends, and many called at "open houses," and found all in good spirits. Now one rarely calls on intimate friends. We made eighty-five calls January first, eighteen hundred and sixty-one; on the same day in ninety-one, one. It was not at all uncommon for dentists—now professional men—to have lists numbering in the hundreds. An æsthetic carriage and driver was a necessity in the time of "way-back" but the times are changing the order of things and we must conform to the customs of the country. We are rising in the social scale quantitatively if not qualitatively. In spite of all piques, the world is moving up on to higher grounds. "The best thing in the month"—Well, who can guess what it is? When it is known that it will bring up in St. Louis, how will Chicago feel? Think of a beautiful "Loving-Cup" going all the way from New York, right by so many good looking men as are located in Chicago?

Some things are grievous to be borne, but our handsome Mc. will try to find consolation in this Cup for all. To say that he has made for himself a warm spot in the hearts of the First District Society is only putting it mildly.

Nothing is done by halves in this society; certainly not if W. W. W. has anything to do with it. One hundred and forty-nine dollars in a solid silver "Loving Cup," of an unique design, is a present to be proud of. Dr. McKellops had popularized himself in connection with the mammoth clinics held by the First District Society at its last three annuals. It is not that the doctor is the handsomest practitioner in the country, oh no—we can mate 'em in pairs, four-in-hands, or fancy matches, right here in New York. Now we do not propose to give anything away in telling what in our view this presentation means. There is to be a Columbian Dental Congress in '93 in Chicago. The committees are in session in Washington making up their sub-committees while I am writing. The key-note of success must be struck on the note of harmony. Love is to be the charmed pass-word through the entire proceeding. Such a treasure must have a casket and all of this be in the hands of one who will keep his best eye on it, and Dr. McKellops is the custodian by acclamation. This will be one of the attractions in the home of McKellops. What a menu for the weary pilgrim. The Cup has a capacity of three pints. This Cup ought to secure the good-will of all, and put all in good spirits. What wait we for now but for a grand move forward. No axes to be edged; differences all pulled in, if not all of one mind, let all be of one spirit.

Starting on this line we can make a showing that will let many a servant depart in comfort; and the stigma, "Nothing but a dentist," wiped out, and the feet of those remaining will be on professional ground. We have pictured to our minds this body in session—about 1,900 present. May they be all degreed? What a comfort this would be to some that have got left. From all nations they will come; and our best looking and tallest member presiding. What a scene this for a Kodak! Only two years and we'll all be there, if old "Time" will only deal gently with us. Let our motto be: No geographical lines, no North, no South, no East, no West, no country, but the World only. The thought of our possibilities stirs us with pride. What a list of names there will be, and pulseless will he be who cannot feel proud of what has been

wrought in the last hundred years. It will be, not who shall be the greatest? for all will be a part of the whole. After this "tooth carpenters" to the rear. Ours will be a profession satisfied with nothing short of the choicest of all that can contribute to our efficiency in helpfulness to the needs of mankind. Tuesday, Jan. 13th, we found 92 eager fellows clamoring for the places around the chairs at S. S. White's depot, eager to take in all they saw, and most of them more, most of them on the watch for something practical that they can take home in a box and turn it into a silver dollar next morning, yet at all these clinics there were sincere seekers after truth more anxious to know than to be thought to know.

From these clinics and the benefit derived from them there has come a class of men who are proving that their observations have not been in vain. We know of some instances where men have received their first impulse for a better practice at these gatherings. These clinics have no limit to the field of invention, as a report of them will show. Dr. Timme demonstrated his method of glass fillings, which was certainly unique and artistic. Dr. Hasbrook, of New York City, administered nitrous oxide gas, in which he is an expert; having made a specialty of it for many years, and receives the indorsement of the better disposed of the profession. Dr. Löwenthal, of Hoboken, exhibited a new form of impression cup, designed for injections of cold water to hasten the hardening of the impression material, meaning, of course, wax and the compounds; a very ingenious arrangement. Dr. E. Parmly Brown, never happy without something new on the earth, was at his best as he demonstrated his asbestos phosphate dento-plast, claiming that it is a perfect protection against all thermal shocks. We hope it will prove all that he claims for it, as it would be a boon. Dr. M. L. Rhein gave an interesting and successful demonstration of the use of chloride of methyl in cavities on the necks of the incisors, which are so often extremely sensitive, made so by contact of a rubber plate—an unclean thing, as every observing man knows. The methyl secured the absence of sensation as proved by excavation, but how about the chill from the arctic regions which it causes when it first strikes the teeth of the patient, who is at home every time, and puts on an angry scowl; we suspect there is room for much good to be manifested in its use.

It would seem, as far as demonstrated, that for extirpating pulps, where it can be applied, it might be made a success. This

must be determined by the experimentation of intelligent practitioners. Dr. W. S. Elliott, happy and genial, as usual, had his side pockets full of interest to us and of a nice little profit to himself. When the profession sees his new disk-holder, with its simplicity of structure, they will say "What next?" And when they see his new matrix and its method of application, they will say "Well, this transcends all." At every clinic there are those who are on the lookout for a surprise; at this particular clinic they had it. Dr. Watkins, of Montclair, N. J., presented a surgical case, as follows: A gentleman, about forty years of age, of large frame, of good stock and strong bilious temperament, tending somewhat to an anæmic condition, sought the doctor for service. Upon examination, dead pulps were found in the superior incisors. The doctor opened and filled them at the same sitting. Within twenty-four hours, so he said, inflammation had so far extended that he was able to take away the entire front plate of bone from bicuspid to bicuspid. The palatal portions were less involved; on the left central incisor the entire process was destroyed, so that the tooth was left without any support, not even the attachment of the gum, so said. Artificial support was provided for this by ligating to the adjoining tooth, and a bridge of plastic materials. This the doctor was soon obliged to remove, because the entire myxomatous tissue near the lateral and central had sloughed, leaving a large chasm. When this case was shown we had the observation of the removal of the tooth; all the necrosed bone had previously been removed and resolution was already established, the danger was passed and nothing was left but to apply intelligent care in regard to cleanliness, and some mildly stimulating applications, and the making of a matrix to this chasm of lost tissue to secure granulations and to protect them until the entire space could be filled by reproduction. The patient should also be put on sulphate of cinchonidia and of nux, phosphorus and cantharides in combination, together with the best of food until the ultimate result could be gained. This was the advice given by Dr. Atkinson, and what he does not know, after the extensive experience he has had, remains for the future to disclose. The surprise in this case was that Dr. Watkins asserted that this terrible destruction of bone tissue had taken place during the interval of about twenty-four hours after his treatment of the dead pulps. As Dr. Atkinson said, it was utterly impossible for such a thing to occur in so short a time. It appeared to us that

Dr. Watkins had failed to get a complete history of his case, which, if he had done, it would have been suggested to him that there must have been some extensive degeneration at the time he operated on the pulpless teeth. We elicited from the patient that he had received a severe blow in the mouth from one of his children, which had caused great pain, continuing for some time afterward. This was weeks previously and some time before he had come into Dr. Watkins' care. We mention this as suggestive in connection with the diagnosis, as it was not brought out at the clinic nor at the discussion during the evening meeting.

Under "Incidents of Office Practice," Dr. Atkinson improved the opportunity to speak instructively upon this case. Dr. Rhein, never easy unless in the arena, took exceptions to some of Dr. Atkinson's remarks, which referred to some spiculæ of bone remaining in one portion of the chasm above mentioned; Dr. Rhein claiming they were carious and not necrotic. He did not convert Dr. Atkinson to his views. Dr. Heitzman gave a review of a paper by Prof. Ebner, of Vienna, on "Researches in Enamel." The doctor was quite happy in this for it gave full proof of the work performed in his laboratory by Bödecker in histology when he discovered the interstitial tissue between the enamel prisms. Dr. Heitzman never carried himself so nicely and in such high feather—earnest investigators do like confirmation of their work by others of like spirit. Why not? The lecture was listened to with an earnest attention. The doctor is always welcomed for his contributions to the exercises of the First District Society. Few so earnest and honest teachers as Dr. Heitzman. His large and finely fitted up laboratory at No. 39 West 45th street is a place well worthy of a visit to those coming to New York. The doctor is very genial and all attention to visitors. His lecture nights with his classes are a treat worthy of being attended also.

The "loving cup," already referred, to was presented to Dr. McKellops while on his way home from Washington, *via* New York, where he had been to attend the committee-meeting in connection with the Columbian Dental Congress. This presentation was made at the house of Dr. S. G. Perry, by Dr. Hodson, President of the First District Society. Dr. McKellops did the best in a speech he could upon the presentation of the cup, considering the unexpected state of mind he found himself in, caused by the surprise of receiving such a magnificent present. It was said he

was all "broke up." Happy remarks followed by Drs. Atkinson, Dwinnelle, Walker, Perry and others.

The Odontological Society entered upon its new administration the third Tuesday of the month; Dr. Dwinnelle the newly elected president presided as though he was fully conscious of the duties devolving upon him. We noticed quite an additional attendance, yet we counted fifteen absentees among the pillars: "Why are these members so generally absent?" is the query among the observing ones. The administration is fresh, all but the treasurer—as the saying goes, "A new broom sweeps clean." Under the "Incidents of Office Practice," Dr. S. G. Perry introduced some new features of Spiral Root Canal Reamers with long flexible shafts capable of being worked bent at right angles, also adapted to the engine. They were really nice and certainly impressed us of their efficiency like many of the doctor's productions.

Dr. Davenport reported a case of a mutilated incisor which he reformed by the use of porcelain veneering, and cementing it to the place making a much more artistic operation than an all porcelain crown, avoiding the necessity of destroying the pulp. Similar operations were reported by Drs. Jarvie and Perry; the latter had one fracture of an implanted tooth that had a V-shaped piece broken out of the cutting edge, which he readily cemented in and it had done good service for fully one year, showing that much can be done for the immediate comfort of the patient. We think it has been too much the practice to do things in what is termed a "permanent way."

All of our operations are more or less temporary?—much like the practice of former days of pulling out all of the teeth—"they will have to come out sooner or later and then you will have to have a "temporary set." When we first commenced practice our neighbors used to make "temporary sets" with the prospect of getting a "permanent one on which to make the profit," lending the temporary set. This may sound rather droll to the dentists of the present generation. We think it is our duty to do all we can for our patients in a short-cut way rather than to do so much wherein much of the pulp and tooth are sacrificed, as is too often done in crown setting rather than to make a substantial filling. Good judgment is a rare quality. This discussion was suggested by the conservative methods of dealing as reported by the society. G. W. Stevens, M. D., entertained the society by an unusually able

paper. Subject: some conditions of mutual interest to both the dentist and the oculist. As was expressed by many it was quite in contrast with many medical papers read before societies in its freedom from technical terms. The paper was lengthy but not tiresome and was listened to with unusual interest. One of the strong points the doctor advocated was that the reflex pains thought to come from disturbed teeth had proven that they often could be controlled by correcting the disordered vision after the use of glasses, sometimes by operations.

This paper will prove to be an attractive one to those who are interested in subjects above the ordinary routine of every-day practice. Drs. Kingsley, Atkinson, Jarvie, Weld and Perry discussed the paper in a cursory manner, for there was so much in it which could only be done in this wise. Many will regard the fact of the Odontological Society being in the hands of Dr. Dwinelle as officiously premonitory of something in a forward movement, for the doctor's former activity dating back as far as 1853, makes him one of the veterans of more than usual capacity.

The Brooklyn Society deviated from its usual course this month by substituting for its table d'hôte and appointed subject for the meeting, the arrangement of "Will" Johnson to go to the Hoagland Laboratory and listen to a lecture by Meade Bolton, M. D., on "Methods of Cultivating Bacteria, and the Proof that Certain Diseases are Caused by the Same." Some forty-eight were present; among them we saw Drs. Morgan, Howe, Evans and Atkinson, besides some ladies. Dr. Bolton proved himself capable of handling the subject. He was extremely modest but earnest. The applications of his classifications were rigidly stated. His lecture was full of instruction, and was certainly interesting. His proofs that certain diseases were caused by bacteria was stated to be that if one used bacteria for inoculation, they could be found after the infection in the blood of the animal inoculated, a knife moistened with that blood, being taken out and stabbed into the media, would produce the same microbe. The lecture was nicely illustrated by lantern slides and tubes of cultures. No one dared to say more than to compliment the lecturer, and to say that they knew absolutely nothing of the subject with the single exception of Dr. Atkinson. He paid an earnest compliment to the doctor upon the unexceptional quality of his lecture, and said while he did not feel like assuming much knowledge of the subject,

yet it did rouse an earnest desire to know of the power that was acting upon the tissues and produced the results that had been so lucidly presented. (We notice often that many dentists are disposed to shrug their shoulders over these subjects as they remark, "What have they to do with our daily practice?") No one who can be called scientific can take such an inconsiderate and cursory view of these subjects which are all yet to prove themselves collateral, and the knowledge gained of which will be found to fit in as stones in the structure being reared, which cannot be complete without them. Dr. Atkinson's remarks were strong and impassioned, more like his former vim than we have heard him for months back. He was decidedly awakened by the interest the lecture had stirred in him. Dr. Bolton was unanimously elected as an honorary member of the society, and a hearty vote of thanks given him also. These minglings with medical men we think are very timely.

What the dentists were saying, 168 of them at the Grand Patriarchs' banquet Saturday evening, Jan. 31st, at Clark's banquet hall, can better be imagined than described—a greater success has never occurred among the dentists. Such cordiality as was manifested has no parallel. Whatever of heart-sore there may have been, or of forebodings in any heart was all dispelled, and all went home full of good will and spirits, more than ever before, if that were possible. Dr. Kingsley can be congratulated upon the complete success of his conception of such an honor conferred upon the Patriarchs; fourteen were in attendance out of the forty or more existing, viz: Drs. John Allen, Burras. Dwinelle, John B. Rich. Atkinson, S. A. Main, of New York City; Hurd, of Williamsburgh; Uncle Jerry Robinson, of Jackson, Mich.; Green, of Chester, Penn.; Wetherbee, of Boston; Volcke, of Baltimore; Newell and Hayhurst, of New Jersey; Straw, of Newburg, N. Y., and Kingsbury, of Philadelphia.

These sat at the table especially prepared for them, beautifully banked with a fine display of tulips and daffodils mingled with smilax.

Letters of good will were received from absentees, viz.: Drs. Spalding, of St. Louis; Dunning, formerly of New York; Maynard, of Washington, D. C.—at the time of writing this he is lying at the point of death, stricken with paralysis. R. Finley Hunt, of Washington, D. C. is also sick. The success of the occasion re-

flects much credit upon all having it in charge. Red cheeks and gray hairs reigned supreme, and all vied with the other in striving to carry off the palm for youthfulness—none more than the patriarchs Drs. Brown, Burras, Robinson, Allen, Tucker, Rich, and Maynard. came in as octogenarians, most of them actively engaged in practice.

COMPLIMENTARY BANQUET TO THE VETERANS OF THE DENTAL PROFESSION,
31st, 1891.

MENU.

Huîtres en coquilles. Sauterne.

POTAGE.

Bisque de homard.

HORS D'ŒUVRES.

Olives. Radis.

POISSON.

Tomates. Bass, sauce piquante. Pommes persillades.

RELEVÉ.

Filet de bœuf, aux champignons. Pommes croquettes. St. Julien.

ENTREMETS.

Petits pois à l'Anglaise. Haricots verts.

ENTRÉE.

Ris de veau à l'Italienne.

PUNCH.

Sorbet au kirsch.

RÔTI.

Cailles piquées. Salade de laitue. Champagne.

SUCRES.

Glaces de fantaisies. Petits gateaux. Charlotte Chantilly.

Bonbons, et fruits glacés en caisse.

Café.

It was commonly remarked that a finer-looking and more social and wide-awake body of gentlemen were not to be found in any calling.

The younger portion present gave much promise for the future practice. They stirred the blood of the patriarchs to a quicker pulsation. We can only notice some of the names by the way of mention: Dr. Shepard, always bland and lovely, and on good terms with Shepard; Gilson, full of energy and good purpose; McLaod, a wide-awake Yankee; Dudley, fat and genial; McManus, polite and cordial; Gaylord, handsome and smiling; Fones, ex-mayor, and on the watch for the best things out; Jackson, bright and small of stature, but sees what is going on; Palmer boys, sons of Corydon; S. G. Perry, prolific in good things; Darby, an ac-

complished gentleman; Stellwagen, a marked looking man in any body of men; Truman, how nice, pleasant and fine appearing, always, and an editor; Noble, full of talk and on the fly; Jersey in full ranks, marshalled by Orator Stockton, ex-editor; Hill, no banquets without him. The first one we ever attended was at his office, where we had sandwiches and beer; this was the second meeting of the Brooklyn Dental Association, in 1862.

There we first met Atkinson and Hurd. Drs. Jarvie, Mirick and Brockway made a good representation for Brooklyn; Northrop, handsomest, tallest, everywhere present and quietly keeping his parliamentary eye on all proceedings; W. W. W., his Grand Marshal, never looked in finer feather, and chuck full of executive ability, the success of the C. D. C. is assured with him as its chief; and Bonwill, thinking fast. Well, time would fail to tell all, but nothing like it before among dentists. May peace on earth and good will follow all in all and through all.

Ex.

FOREIGN CORRESPONDENCE.

LETTER FROM CANADA.

TORONTO, January 13, 1891.

To the Editor of the DENTAL REVIEW:

DEAR SIR:—In reference to the statements respecting American Dental Colleges reported in the January number of the *Dominion Dental Journal* as having been made by me at the Dental Student's Dinner in Toronto, in November last, and which you may be disposed to criticise severely, the following correction will appear in the next (March) number of that journal.

Yours very truly,

J. B. WILLMOTT.

“To the editor of the *Dominion Dental Journal*:

“DEAR SIR:—On opening the current issue of the *Journal* this morning I was astonished beyond measure, and I fear betrayed into some very uncomplimentary remarks respecting the editor, when I found myself reported as saying at the Dental Student's dinner that ‘until recently all that had been necessary for a medical or dental student across the line to graduate, was to be able to sign your name and produce a \$5 bill.’ Of course I never made any such statement. I am not quite a fool. The report seems to have been taken from one of the daily papers which put some such

statement into my mouth, but corrected it next morning in its editorial news column. I was speaking at the moment of the application of the R. C. D. S. for membership in the National Association of Dental Faculties, and referring to the good work which the association had done in raising the standard, extending the term to three years, and securing a matriculation examination; remarking incidentally that 'until in recent years all that was necessary to matriculate was to sign your name and produce a \$5 note.' I matriculated in that way myself, and nothing more was at the time required. So far from belittling the American Colleges, I was really congratulating dentistry on a vast improvement on the past. While writing, I may be allowed to add, that while always ready to defend the R. C. D. S. against false statements or unfair criticism, I am far too sensible of the defects in our college—defects which I see no near prospect of being remedied—to launch out in any such wholesale laudation as that with which I am credited. I am very sorry that such a manifestly false statement found a place in your columns, as it must do me much harm. I trust that any of your exchanges who may have referred to the matter will give me the benefit of this correction. I have no special ambition to be known as a libeler of American colleges, of one of which I am a graduate.

"I am yours, etc.,

J. B. WILLMOTT.

"TORONTO, January 1, 1891."

REVIEWS AND ABSTRACTS.

CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY FOR 1890. B. H. Catching, D. D. S., Editor and Publisher, Atlanta, Ga., Constitution Publishing Company, 1890. Cloth bound, \$2.00.

This book, to the preparation of which Dr. Catching has devoted his leisure moments of 1890, is well bound, the print is neat and clean on good paper, it contains 259 pages. The contents are well selected practical articles from various dental journals, there being 244 of them, comprising operative and prosthetic dentistry, crown and bridge work, orthodontia, dental medicine, oral surgery and miscellaneous. There is also a list of dental journals of the world and a list of dental books published during the year. In selecting the articles which the editor presents in this volume, he has accomplished all that can be desired, for he certainly has

"skimmed the cream" of what has been published during the year. In so doing he has unconsciously paid the DENTAL REVIEW a compliment by having republished a greater number of its articles than from any other dental journal. The book ought to be valuable and useful to all practitioners; it is practical in every sense of the word. The busy practitioner will find gathered together all that has been added to the general store of knowledge on any particular subject during the year. He who takes many journals will find that it saves time to be able to find everything so compact, while the dentist whose current literature is meager will find the volume a valuable addition to his library. There is another volume now in course of preparation, which is to contain the cream of the current year's periodicals and which will be published in January, 1892.

PAMPHLETS RECEIVED.

"Schlafgas," by Dr. Hillischer, Vienna, 1891.

"On the Dangers Arising from Syphilis in the Practice of Dentistry," by L. Duncan Bulkley, A. M., M. D., 1890. Reprint.

DENTAL KALENDER FÜR DEUTSCHLAND, OESTERREICH-UNGARN UND DIE SCHWEIZ, 1891. Parts I and II Published by Dr. Erich Richter, Chausseestr. 1a. Price, 3 mk., 50 pfg.

? ? ?

GOLD FOIL.

To the Editor of the Dental Review :

SIR—What has led to the general, in fact, to the almost universal use of No. 4 gold foil? Is the difference between Nos. 2, 3 and 5, 6 so much as to warrant the exclusive use of No. 4?

Yours truly,

A READER.

February 5, 1891.

MEMORANDA.

Dr. A. W. Harlan and wife are in Europe.

Dr. E. Maynard, of Washington, is very ill, and not expected to recover.

Dr. John J. R. Patrick paid a visit to Chicago during the present month.

Dr. John B. Rich, one of the pioneers, now resides in Washington, D. C.

Dr. W. St. George Elliott has retired from practice, and resides in Washington, D. C.

Drs. A. O. Hunt, of Iowa City, and W. O. Kulp, of Davenport, were recent visitors to the World's Fair City.

A letter from Dr. Haskell, which should have appeared in the January number, is inadvertently laid over until March.

At the first annual meeting of the "Chicago Anæsthetic Club" February 5th, Dr. B. J. Cigrand read the annual address.

Over six weeks of the new year have actually passed and not a single dental college has been incorporated in the State of Illinois.

We cordially welcome Dr. Henry W. Morgan, of Nashville, into the ranks of dental journalism as the new editor of *The Dental Headlight*.

Dr. H. B. Noble received the World's Columbian Dental Committee January 19, at his home in Washington. He also entertained the Washington City Dental Society.

The *Zahnärztliche Rundschau*, published and edited by Dr. A. Papsch, has discontinued publication at the close of 1890. We trust that it may again be numbered among our exchanges.

Dr. A. Morsman, formerly a practicing dentist of Omaha and an associate editor of the *Western Dental Journal*, is now general purchasing agent of the Pacific Express Company, at Omaha, Neb.

Attempts are being made in Illinois to so amend the Dental law as to require a license from the State Board of Dental Examiners, regardless of previous qualification, and to compel dentists to pay an annual license fee.

The twentieth annual meeting of the Kansas State Dental Association will be held at Wichita, Tuesday, April 28th to May 1st inclusive. All members of the profession who can meet with us, will be cordially welcomed.

Dr. Claude A. Southwell, of Milwaukee, Wis., has returned to active practice again. For the past five months the doctor has been disabled on account of an abscess in the back—perinephritis—from the effects of which he underwent an operation.

At the annual meeting of the Chicago Dental Club held at the Tremont, January 26, the following officers were elected: President, Dr. A. B. Clark; Vice-President, Dr. E. L. Clifford; Secretary, Dr. C. Stoddard Smith; Treasurer, Dr. E. M. S. Fernandez.

The Dental Legal Association was organized in Chicago, February 12. Its objects are to promote better dental legislation; to lend strength to the State Board of Dental Examiners in prosecuting illegal practitioners, and to have at heart the welfare of the dental profession at large.

At a meeting of the Hayden Dental Society of Chicago, held December 15, 1890, Dr. Alfred J. Oakey read a paper on "Teething," which was generally discussed. The next meeting was held at the office of Dr. Cowen, 63d and Stewart avenue on Monday evening, January 19th, 1891. A paper on "Irregularities" was read by Dr. J. L. Ubellar, the discussion opened by Dr. Garrett Newkirk.

Dr. Barrett, who has had an extended experience in that direction, says that the ways of the proof-reader are past finding out. In the fifth paragraph of his article in the January REVIEW, they "corrected" the word "complaisance,"

making it "complacence." He declares that he knows how to spell, was certain as to which word he desired to use and does not accept the "complacence" of the proof-reader with "complaisance."

At a recent meeting of laryngologists in London, says the *Medical Press and Circular*, Mr. Lennox Browne related the case of a middle-aged woman who was sent to him from the provinces for the purpose of deciding whether her malady was laryngeal cancer or phthisis. Though a tall, large-boned woman, she only weighed a little over ninety pounds, and was obviously very much emaciated. He peeped down her larynx, and to his surprise (we presume) saw what he recognized to be a plate with artificial teeth firmly impacted in the larynx, where it had been for the last twenty-two months unbeknown to the patient. She remembered having been awoke in the middle of the night by a violent fit of vomiting, and when the teeth were inquired after it was assumed that they had been thrown away with the dejections. From that day forth, however, she suffered from difficulty in breathing, etc., associated with progressive emaciation. With some difficulty the plate was removed and exhibited to the admiring friends, and the patient rapidly recovered health and spirits.

Aluminium was reduced from its chloride by electricity by Henry St. Clair Deville, the very eminent French chemist, in March, 1854, and was fully described by him in the paper presented to the French Academy of Science Aug. 14, 1854, when he exhibited bars of aluminium thus made. Napoleon III. at once became greatly interested in the subject, inasmuch, as he perceived many military uses of the metal; and he at once supplied the funds for further investigations by Deville. The first object made of pure aluminium was a rattle for the Prince Imperial, and the metal was exhibited at the Paris Exposition of 1855 as "silver produced from clay." In the same year with Deville, Bunsen described a similar process of electrolytic extraction in Poggendorf's "Annalen."

In 1859 Deville published his treatise "De L'Aluminium," and this work contains a complete account of his electrical processes, with pictures of the apparatus. Subsequent to Deville and Bunsen and before Cowles came the electrolytic processes of Le Chatelier, 1861; Monkton, 1862; Gaudin, 1869, Kargenbusch, 1872; Berthaut, 1879, and Gratzel, 1883, all of these people working on the electrolysis of fused aluminium salts. Besides these there were a large number of inventors who patented processes of obtaining aluminium by the electrolysis of aqueous solutions. Prior to the Cowles patent, four United States patents were granted for the electrolytic extraction of aluminium, the earliest dated 1880.—*Exchange*.

Lord Althorp, when chancellor of the Exchequer, having to propose to the House of Commons a vote of four hundred pounds a year for the salary of the Archdeacon of Bengal, was puzzled by a question from Mr. Hume: "What is the duty of an archdeacon?" So he sent one of the subordinate occupants of the Treasury Bench to the other House to obtain an answer to the question from one of the bishops. The messenger met first with Archbishop Vernon Harcourt, who described an archdeacon as "aid-de-camp to the bishop"; and then with Bishop Copleston, of Llandaff, who said; "The archdeacon is *oculus episcopi*." Lord Althorp, however, declared that neither of these explanations would satisfy the House. "Go," said he, "and ask the Bishop of London. He is a straightfor-

ward man, and will give you a plain answer." To Dr. Bloomfield accordingly the messenger went and repeated the question: "What is an archdeacon?" "An archdeacon," replied the bishop in his quick way, "an archdeacon is an ecclesiastical officer who performs archidiaconal functions." And with this answer Lord Althorp and the House were perfectly satisfied. It ought to be added, however, that when the story was repeated to the bishop himself, he said that he had no recollection of having made any such answer, but if he had it must have been suggested to him by a saying of old John White, "a dentist, whom he had known in early days, who used to recommend the use of lavender water to his patients, and when pressed for a reason for his recommendation, replied: "On account of its lavendric properties."

The following is a part of an article recently published in a Chicago daily: A million dollars' worth of gold in the mouths of Chicago people? So he began to make inquiries at the offices of a score of local dentists—men of every kind, with large practice, middling practice and small practice, so as to strike a happy medium. The result of this investigation was a full confirmation of the above claim. In fact, it would seem that the above quoted authority, if anything, rather under than over estimated the figure. Of the twenty dentists interrogated there were some who use \$1,000 of gold in their practice, some who use as much as \$1,500 and even \$2,000 worth, and there was one firm (reputed to be the largest consumers among practicing dentists in town) who stated their annual consumption to be as high as \$5,000. There were some, too, who used but \$500 worth, one with \$650 and another half-dozen whose annual consumption is between \$100 and \$300. They didn't express it that way, though. They spoke of ounces of gold. Now, an ounce of perfectly pure and refined gold—free from every alloy—such as is exclusively used by dentists for filling teeth, costs from \$27 (for untrimmed) to \$30. A dentist of good practice will use up from twenty to thirty ounces of this gold per year, or from \$600 to \$900. A number of dental firms with a corps of assistants or with two or three practicing partners use from sixty to 150 ounces per year. There are some 650 dentists' offices in this city. If one puts them down with an average of \$175 each—which is a low estimate according to the statement of the representatives of dental supply firms spoken to—there is a total annual consumption of gold by Chicago dentists of \$113,750 shown. If one multiplies this with fifteen one will get just about the figure for the present generation, and that would make it come nearer \$2,000,000 than \$1,000,000.

WORLD'S COLUMBIAN DENTAL MEETING.

In accordance with the order of the president, Dr. W. W. Walker, there was a meeting of the General Executive Committee of the World's Columbian Dental Meeting at Willard's Hotel, in Washington, D. C., on the 19th day of January, 1891.

ODONTOGRAPHIC SOCIETY OF CHICAGO.

The third annual dinner of the Odontographic Society, of Chicago, was given at the Commercial Hotel, Monday evening, January 12th. About forty members and invited guests enjoyed the feast. Dr. D. C. Bacon delivered the president's annual address and Dr. A. W. Harlan read a paper on "Recreation and the Conservation of Energy." To the toast "Our Guests," Dr. C. S. Case, of Jackson, Mich.,

responded. "Our Society," responded to by Dr. Edmund Noyes; "The Dental Profession," T. W. Brophy; "The Medical Profession," W. L. Copeland; "The Dental Press," C. N. Johnson. While impromptu speeches were made by Drs. Ottoby, Wachter, Keefe, Tuller and others.

HERE YOU ARE. THE MCKINLEY BILL CAUSING PRICES TO GO UP.

We observe fresh instances of the manner in which the talk of increased prices has ceased since the election, as the high-tax journals say. Here is a circular from a New York firm—one of the best known in its trade:

NEW YORK, NOV. 29, 1890.—To the Dental Profession: The McKinley bill having raised the duty on plain pin teeth of our manufacture from \$17.50 to \$52.50 per 1,000, we are unable (for the present) to import any further shipments of these teeth. We cannot, therefore, execute wholesale orders, but will continue to supply the profession at existing retail rates until our present stock is exhausted.

The duty on dental rubbers has also been advanced, but for the present we shall make no alteration in retail prices.

Many of the profession are fully aware that our London house and all its branches have been liberal buyers of American dental manufactures. And, for reasons that need not be mentioned here, it would have been in the best interests of the profession if the preëxisting high rates of duty had been lowered instead of raised. They will also readily understand in whose interest this increase has been made.

Respectfully yours,

CLAUDIUS ASH & SONS, Ltd.

30 East Fourteenth street, New York.

—Exchange.

DENTAL PROTECTIVE ASSOCIATION.

SAN FRANCISCO, Jan. 15, 1891.

To the Editor DENTAL REVIEW:

DEAR SIR—At the October meeting of the San Francisco Dental Association the enclosed resolutions were passed and the Secretary instructed to forward the same to the different Dental Journals for publication.

Will you please give them a place in your Journal?

Fraternally Yours,

CHAS. E. POST, D. D. S., Recording Secretary,

302 Stockton St.

WHEREAS, Dr. J. N. Crouse, of Chicago, the Chairman of the Dental Protective Association of the United States, is personally known by the President and other members of the San Francisco Dental Association to be an honest, earnest and enthusiastic worker for the good of the profession; therefore be it

Resolved, That this Association endorse the methods of Dr. Crouse in conducting the Dental Protective Association, and strongly urge every dentist of the Pacific coast to become a member of said Association; and be it also

Resolved, That a copy of this resolution, signed by the President and Secretary, be forwarded to Dr. Crouse with permission to insert it in each circular that he sends to this coast.

THOS. N. IGLEHART, President.

CHAS. E. POST, D. D. S., Recording Secretary.

[SEAL.]

MISSISSIPPI VALLEY DENTAL ASSOCIATION.

The 47th annual meeting of the M. V. D. A. will be held in Cincinnati, O., March 10, 11 and 12th, 1891. The following list of papers has been secured up to the present time:

President's Address, M. H. Fletcher, Cincinnati.

Dentistry Thirty Years Ago and Now, J. W. Jay, Richmond.

Recent Advance in Dental Mechanism and Art, C. Stoddard Smith, Chicago.

The Proper Sphere of the Dentist, H. H. Harrison, Wheeling.

Surgery of Cleft Palate, B. M. Rickets, Cincinnati.

Scientific Investigation of the Jaws and Cranium, Eugene S. Talbot, Chicago.

Why Copper Amalgam Sometimes Washes in the Mouth, W. B. Ames, Chicago.

Continuous Gum Work (Clinic), G. R. Riddell, Chicago.

The Executive Committee are working on the new plan adopted at the last meeting. The number and quality of the papers already secured promises a meeting of more than ordinary interest. For further particulars see March number of the DENTAL REVIEW, or address

J. R. CALLAHAN, Secretary,
January 17, 1891. 79 West Eighth St., Cincinnati, O.

THE HAYDEN DENTAL SOCIETY OF CHICAGO. PROGRAM FOR 1891.

January 19. Essayist, J. L. Ubellar. Subject—Irregularities. Discussion opened by Garrett Newkirk.

February 16. Essayist, W. H. Cowen. Subject—Copper Amalgam. Discussion opened by P. J. Kester.

March 16. Essayist, A. W. Freeman. Subject—The Protection of the Cervical Border in Filling. Discussion opened by Edmund Noyes.

April 20. (Annual Meeting.) Essayist, A. J. Oakey. Subject—Fifth Pair of Nerves. Discussion opened by J. W. Wassall.

May 18. Essayist, J. O. Brown. Subject—Operative Dentistry. Discussion opened by C. N. Johnson.

June 15. Essayist, Louis Ottofy. Subject—The Saliva. Discussion opened by H. W. Hemingway.

July 20. Essayist, L. M. Goodearle. Subject—Dental Laws in the United States. Discussion opened by C. R. E. Koch.

October 19. At the residence of Dr. Ubellar. Essayist, H. O'Brien. Subject—Crowns. Discussion opened by J. G. Reid.

November 16. At the New Julien Hotel. A general meeting of dentists who practice or reside in the southern part of Cook County, will be addressed by Dr. J. N. Crouse, of Chicago, on "Dental Protection."

December 21. Essayist, J. L. Ubellar. Subject—Alveolar Abscess. Discussion opened by A. W. Harlan.

OFFICERS, 1890-'91—President, Louis Ottofy; Vice-President, W. H. C. Cowen; Secretary-Treasurer, J. L. Ubellar.

EXECUTIVE COMMITTEE—A. J. Oakey, J. O. Brown, J. L. Ubellar.

The main purpose of the society is to improve its members. Meetings are held on the third Monday of each month, except August and September, at the offices of members, in that part of Chicago formerly known as Englewood. Visitors are cordially invited and always welcome. Any reputable dentist may become a member. The dues are one dollar per annum.

NECROLOGY, MEDICINE 1890.

Dr. C. B. Goldsborough, New Orleans, La.; Dr. Charles McMillan, Medical Referee of Pension Bureau, Washington, D. C.; Dr. W. L. Candee, Milwaukee, Wis.; Dr. William B. Eager, Middletown, N. Y.; Sir William W. Gull, England; Dr. William F. Peabody, San Francisco, Cal.; Dr. Thomas T. Seelye, Cleveland, O.; Dr. Francis Rea, Washington, O.; Dr. Israel Lukens, Rahway, N. J.; Dr. Edwin D. Willard, Lancaster, Cal.; Dr. Charles N. Stephens, St. Louis, Mo.; Dr. E. A. Kilbourne, Superintendent Illinois Insane Asylum; Dr. Edmund K. Henschel, New York; Dr. William C. Lane, Mercersburg, Pa.; Dr. Louis C. Rondauer, surgeon, New Orleans, La.; Dr. John P. Davidson, New Orleans, La.; Dr. John W. McMenamy, Omaha, Neb.; Dr. Jay Owens, St. Paul, Minn.; Dr. J. C. Thompson, Terre Haute, Ind.; Prof. Samuel R. Percy, New York; Dr. John Crowell, Haverhill, Mass.; Dr. Lewis Merriman, Beloit, Wis.; Dr. Samuel Rush Haven, Chicago, Ill.; Dr. Walker Bailey, New Orleans, La.; Dr. F. M. Rule, Marksville, La.; Dr. W. H. Byford, Chicago, Ill.; Dr. William S. Cooper, Troy, N. Y.; Dr. Roger Keys, Philadelphia, Pa.; Dr. J. W. Howe, New York; Dr. Joseph P. Ross, Chicago, Ill.; Dr. William Russell, Utica, N. Y.; Dr. Willis Westmoreland, Atlanta, Ga.; Dr. William D. Bizell, Professor in Southern Medical College, Norcross, Ga.; Dr. Henry H. Longstreet, Bordentown, N. J.; Dr. R. C. Work, Decatur, Ga.; Dr. William Brodie, Detroit, Mich.; Dr. George P. Baker, Providence, R. I.; Dr. J. Adams Allen, Chicago, Ill.; Dr. Robert A. Mainwaring, Connecticut; Dr. James Matthews Duncan, Edinburgh, Scotland; Dr. Henry J. Bigelow, surgeon, Newton, Mass.; Dr. Johann N. Nussbaum, oculist, Munich; Dr. T. K. De Wolf, Otis, Mass.; Dr. R. J. Levis, Philadelphia, Pa.; Dr. Charles A. Miller, Superintendent Longview Insane Asylum, Cincinnati; Dr. Justus Dunot, surgeon, Philadelphia, Pa.; Dr. Jedediah H. Baxter, Surgeon-General, U. S. A.; Dr. J. L. Stuart, surgeon, Erie, Pa.

OBITUARY.

DR. JULIEN J. VANDERFORD.

Dr. Julien J. Vanderford, of Stuttgart, Germany, died at his home in that city on the 6th of January, 1891, of rheumatic fever. Dr. Vanderford was forty-five years of age and was a native of Baltimore, where he resided until he was two years old, when his parents removed to Elkton, Md. In the latter place he grew to manhood and studied dentistry with the celebrated Dr. B. J. Bing, now of Paris, France. Dr. Vanderford afterward graduated at the Pennsylvania College of Dental Surgery, Philadelphia, and then for a time practiced his profession in Middletown and Delaware City, Del. Returning to Philadelphia he became the demonstrator of operative dentistry in his alma mater until February, 1877, when he went to Europe and followed his profession for two years at Frankfort-on-the-Main. He then finally located at Stuttgart, where he enjoyed a large and lucrative practice until his death. He leaves a widow, who was a Miss Smithurst, of Philadelphia, and one daughter, in the tenth year of her age.

THE DENTAL REVIEW.

VOL. V.

CHICAGO, MARCH 15, 1891.

No. 3.

ORIGINAL COMMUNICATIONS.

ANNUAL ADDRESS.*

BY B. J. CIGRAND, B. S., D. D. S., CHICAGO.

Mr. President and Fellow-Professionals: One year ago to-night, in the presence of an intelligent representation of the medical and dental professions of this city, there was launched a new and untried boat, "The Chicago Anæsthetic Club." The boat was finished, its build was good and fashioned well to pierce the unknown mist. But since it was the first boat of its kind, in the history of man, to skim the bosom of the rough, much remained to be prophesied. The voyage we trusted would be free from perils of wreckage or discontent, and the boat in the hands of a most devoted crew was ready to be launched. The sails, that memorable night, were yet immaculate and hanging anxiously waiting to steal a kiss from the saucy wind; the rudder yet undipped and dry, had not yet the good will of the angry waves; and its proud breast so firm and true had known no breaker's buffet. But, to-night among worthy companions we raise the banner higher, and with uplifted hearts and hands we celebrate our first anniversary. Twelve months upon the sea of time, our skiff still safe and sound, with hopeful crew of right good cheer, we sail along. The first year's voyage of a new boat justly tests its merits and thoroughly demonstrates its fitness for further journey. Now our craft has faithfully stood this trial, and joyfully do I say "without a leak or broken

*Delivered at the First Anniversary of the Chicago Anæsthetic Club, February, 1891.

rudder." Such has been its past record, and of its glorious future we will let Father Time soothingly sing. But, kind brothers in profession, our immediate success must not tempt us to lay idle ; but, on the contrary, stimulate us with grander hopes and higher aspirations. Let us distinctly know where and why we sail, and thus be enabled to avoid the many rocks that lie in our course. Let us all be in harmony with our captain, and when he calls for aid let there be no shrugging of shoulder. Our constitution and by-laws, which we have all read before entering the cabin, definitely tell the aims and objects of our voyage. The next thing to be thoroughly acquainted with is the unskimmed path before us. It will never do to sail at haphazard, for thus we might for ages be circling the trackless ocean, without a sign of the promised land. Let us remember the counsel given to a young artist, who lay reclining upon his couch and wondered what the fates would work out for him. Directing his attention to a block of unhewn marble, with chisel lying by its side, a visionary sculptor appeared and thus addressed him :

"Sir :

There's the marble, there's the chisel,
Take it, work it to thy will ;
Thou alone must shape thy future,
Heaven send thee strength and skill."

And in a similar manner might one of the old fathers of medicine appear and tell us not to trust to fate for a safe landing or way, but be up and doing, and thus by the sweat of our brow find it : and in order that we may know how to sail and what's to be done, we must have a clear conception of the outlines of that which is to be established, and constantly have our imaginary ideal vividly before us.

In all grand works of man the ideal was the basis of the real. In our own modern times take for example the magnificent auditorium with all its halls, porticoes, entrances, pillars, stairways, arches, balconies and tower, was designed by the architect in all its grand proportions and arrangements before the foundation stone was laid. The sculptor who chiseled from the huge misshapen block the almost living and breathing figure of Abraham Lincoln, in a park by his name, saw in the rough stone the ideal statue.

And as plans and specifications are necessities for building structures, so likewise they are required in the construction of

character and societies. Our design in the Chicago Anæsthetic Club is simple and yet grand. We have lived one year, abiding closely to the plans and specifications laid down in the Constitution. Our Club's object to aid in the investigation of the Science of Anæsthesia, mutual improvement of all its members in the knowledge pertaining to Anæsthesia as a science, and thus prevent the seriousness often resulting from lack of information is our absorbing thought. The great aim of our Club can only be attained by having in our boat only such men as will steer for the right regardless of how rough the journey may be, or how long the voyage may last. The task of obtaining such men is no small one, as our roll-book of last year will indicate. To-night we make our annual *rendezvous* and we anchor at the island which marks our first year's progress. Here on this oceanic oasis, we expect to gather new men within our folds and thus strengthen our yet enfeebled crew. But let us not be hasty in calling to our deck men whom we believe lack the necessary qualities of a fearless sailor; and may we ever fully realize the importance of inviting those only, who have at heart our cause. It is largely in the membership that depends the success of our Club and only the strictest observance to the cautions will lead us to the desired port.

Let no man enter our boat who has not in him the spirit of search and investigation, for he is best adapted to remain in his office at his daily routine; since out on the surging waters he would tire looking for the promised land. Let all doubting hearts stay ashore, where eyes can see and believe; since out on the brine they would fail, for lack of hope and confidence. Let all that expect immediate compensation turn their faces homeward; since on the bosom of the sea little money can be found. Let all those who fear the sharp pangs of the critic's dart, shield themselves with ignorance, unprogressiveness; since out on the roaring waves their delicate "make ups" might become spattered. Let all who despise reform and enlightenment hide their bedimmed light beneath the basket, and there remain till Gabriel blows his horn.

But gentlemen of the club, let those who desire to benefit the present humanity; who love rather than despise just criticism; who admire and assist a professional brother; who eagerly enlist in search of truth and right; let all such enter our boat unmolested, for in them we will find the true spirit of a sailor.

To some few undecided ones who to-night watch us from the

shore, we would say, "Do not stand and wonder what we are about, but step up to the boat and ask any of our crew and they will gladly tell you the object of our beneficent journey." To others who hesitate for fear of a general failure we say: "Don't you think the world will think more of us to have tried and failed, than not to have tried at all?" Some few others will remark that they would gladly be with us, but they felt that they were too little experienced and backward generally, and thus regretfully declined accompanying us. To these unhappy calculators we would say: "Though the quota you contribute to the success be small, and almost unappreciative, we will be many times thankful for what assistance you gave, and were much pleased to receive your encouraging words when all was yet in darkness." And it might be well for these men to think of Miss Lucy Larcom's verse which reads:

" Suppose the glistening dewdrops,
Upon the grass should say :
' What can a little dewdrop do
I'd better roll away.'
The blade on which it rested,
Before the day was done :
Without a drop to moisten it,
Would wither in the sun."

This evening we again elect a gallant captain, and when he calls by bugle "All on board the Chicago Anæsthetic Club," forward will rush a merry band of reformers. How happy we all ought to feel to know that our mission is intended to relieve many sufferers. How willingly we should take upon us the pleasant duty of sounding the seas of science. But it will not all result in joy and pleasure, for there will be times when hardships fiercely stare us in the face; but with the courage of a Columbus, the bravery of a Washington, and the patience of a Franklin, the difficulties and obstacles will melt from our path like snowflakes in June. There will be times when from the boat some eager watcher truly believes he has discovered the promised land, and all our hearts will respond to the joy of our eyes; but the land we so dearly desired will turn out to be nothing more or less than a cloud on the horizon. There will be false lights on sandy and shallow nooks that invite us to wreck-age, and if we are tempted by them and land in these "harbors of mislead," our voyage will end disastrously. Our boat though young and strong may, while out on the tossing breast be rent by an unexpected gale that may shatter its very ribs and keel,

and then kind sailors of reform we must not yield to discouragement, but with a willing hand once more restore the dignity of our vessel. Let us repeat the stanza written by the immortal Longfellow :

"Sail on, nor fear to breast the sea ;
Our hearts, our hopes, are all with thee ;
Our hearts, our hopes, our prayers, our tears,
Our faith triumphant o'er our fears,
Are all with thee—are all with thee.

To-night, as we again embark for another year, we will see on the shore we leave a crowd of fun-makers who will laugh at us and our intentions with derision. But if we are true Reformers we will mind them not, but reflect and know the common fate of all, discoverers, inventors and reformers. They we know are always ridiculed and incessantly tormented by the unfaithful populace. Who of us does not recall the sad incident in Galileo's life, when he discovered that the world turned on its axis, daily, and made known his discovery, he was arrested, put in chains and brought to the man in purple at Rome. Here he was asked to give account of himself and recant, but the firm, and though aged Galileo, looked the inquisitors in the whites of the eye and said, "No, I shall not recant, for the world *does* turn."

Who of us here to-night does not with pleasure think of the courageous reformer, Martin Luther ; think of the tasks, hardships, trials and tribulations that this poor mortal was willing to face, and all for the good of an unappreciative folk. Time, however, has opened the eyes of the people with the key of education, and to-day the man who was despised as a heretic and a villain, is beloved and even worshiped.

With such beacon-lights before us as these, let us gather ourselves and battle. Our own great man, Horace Greeley, has said, "To have lived and not been a reformer is not to have lived at all." Though, as the German says, "Ingratitude is the world's pay," yet let our watchwords be "ONWARD and FORWARD," regardless of compensation or gratitude, the time will come when the sports on the shore will gladly bow their heads and say, "Verily, verily, are these men benefactors and deserve our respect !"

Thus ready for our New Year, cast off, weigh anchor, trim the sails and let us fly, for ONWARD is the language of creation ! The stars whisper it in their courses ; the seasons breathe it as they succeed each other ; the night winds pipe it to empty chimneys ; the waters

of the deep roar it out to the shores; the mountain tops lift up their heads to proclaim it to the clouds, and THE CHICAGO ANÆSTHETIC CLUB heralds it to all the civilized world.

DENTAL EDUCATION.

BY C. N. JOHNSON, L. D. S., D. D. S., CHICAGO.*

There was a time when one man might hope to master the scientific knowledge of the world. A Socrates, a Plato, could well compass all that was then known of established science. They might even—so narrow was the limit—go beyond the bounds of demonstrated fact and reach far out into the broader fields of speculation.

The energies of the student in those days were taxed not so much with acquiring accepted truths as with finding new facts. Well might the title "Professor of Universal Knowledge"—as knowledge then was—have been written after the peerless name of Aristotle. The thinking man of that period dared to cope with every phase of human thought. No one science had been developed to the extent of demanding his whole energies for its understanding, and he could dip at will into the various themes which in that fresh spring time of learning lay ever before him with the invitation for new research.

No man was called learned in those days who had not sounded all the heights and depths of that which then had been proved. Speculation was broad—well established science meager.

With the accumulation of knowledge the attitude of individual man toward learning changed. As science broadened and the various lines of thought became more fully developed, it was no longer possible for one man to follow them all in detail. Science became diversified and the student's course was necessarily changed in accordance. He might now study the fundamental principles underlying all knowledge—indeed this is a requirement of learning in every age—but he could not well become conversant with the minutiae of every subject, and must needs—if he would attain perfection—seek out some one branch and devote to it his whole attention. Thus it was that specialties were created, and thus it is that

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the greater the advancement in scientific knowledge, the greater the tendency toward special study.

To-day if a man becomes eminent it is rather because of his proficiency in some one thing than his knowledge of all things. The world now is suspicious of he who assumes universal attainment—the nineteenth century lends its ear to the specialist only.

All this is in the line of truest advancement, for never could our present state of perfection in many of the sciences have been attained were it not for continued and concentrated effort in one direction. To the specialist then belongs the credit for most of the inventions of the age.

And so it is in the history of every branch of science. The progress of a profession is marked by the same stages of evolution from a narrow generalism to an extended specialism that we have traced in the progress of universal knowledge.

When dentistry first began to claim recognition as a calling worthy the importance of being termed a profession, the student who undertook its study had little to learn compared with that which confronts the student of to-day. A few months' practice in manipulation, a few general rules in mechanics, and a few terms in drugs, constituted the sum total of his instruction. Nor was much more necessary to a perfect understanding of the profession as it was then known and practiced. Studying dentistry in those days fell far short of developing all those fine perceptions of taste and learning which characterize truly scientific men in all ages. It was more in the nature of learning a trade than studying a profession.

But if dentistry was then in truth on a mere level with strictly mechanical pursuits, it has since grown to the magnitude of a learned profession, with possibilities sufficient to engage the best brain and talent of the scientific world.

It must be obvious then that the present demands in dental education are far in advance of those in vogue a score of years ago. The farther we proceed the higher must be our standard of education. Let us look calmly at the problem of our future professional advancement and see if we may discover the most potent factor in the result. If we are discerning, we shall find that our systems of education have a greater bearing on our progress than any other agency which we are called upon to consider. In view of this may we not well ask the question; whether or not our present systems are in keeping with the most advanced interests of the profession?

The query is not, whether they are better than formerly, but whether they are as perfect as they should be. The answer to the former would willingly be in the affirmative, but to the latter it decidedly must be in the negative. What then are the main defects?

Let it be granted first of all that colleges are, and will continue to be, the best mediums for the education of students. We may also pass the question as to who or what shall form the governing power of the colleges, whether the government, state, or private corporation. The main thing of importance in this connection, as it relates to the present paper, is that there should be uniformity of method in all the colleges of any one country; and in fact better results would probably accrue from a certain degree of uniformity in all the colleges of the world. What we wish here to notice particularly are the various imperfections in the average dental college of to-day.

First of all is the evil of allowing applicants to matriculate without the necessary qualifications. There is great laxity in this matter in most of our schools, and to it is largely traceable much of the ill which to-day we are called upon to criticise. It may be accepted as a rule that unless an applicant has the fundamental principles of a general education perfectly engrafted in his mind, it is impossible for a dental college to make of him a practitioner who will take proper place in the world as a fitting representative of a learned profession. He who cannot utter a sentence without violating the commonest rules of grammar and orthoëpy will not impress the listener with the dignity and culture of his calling. If in the future the profession is to assume the position in the community of a cultivated body of men, we must see to it that those who enter our ranks are fitted to sustain its reputation.

To make a successful student of denistry the applicant should previously have studied well toward acquiring a preliminary education. The very fact of training the mind in any line of thought renders the individual more receptive, and better qualified to comprehend all those intricate theories which confront the student of modern dentistry. Take a plow boy from the fields, with brain unaccustomed to concentrated effort; and no matter how faithful and earnest he may be in his studies, it will take nearly the whole of his first term in college to bring his mind into a proper state of comprehension. All this should have been done before he entered

the college. It will require every moment of his time during the ordinary college course to thoroughly master the various subjects taught, if his mind is in the best possible condition for study on his entrance. The dental college is not the proper place for mental training. Its true function is the dissemination of knowledge, and its students should be properly equipped beforehand for the reception and retention of that knowledge.

It is true that many students enter college under the disadvantages of a limited education, and by close application and a natural talent, eventually make a creditable showing; but this is no argument in favor of lax methods of matriculation. The same students entering college with a good education would have advanced to a greater state of perfection than is possible without it, and the desideratum in all college instruction is to raise the student to the highest perfection possible. •

One argument sometimes used against stringent methods of examination for applicants, is that such a system would exclude many deserving young men who, through force of circumstances, have not been able to acquire an education. It is claimed that these men often make the best dentists, and it would be an injustice to shut them out. An answer to all such arguments is found in the fact that with our present facilities for education there is no excuse whatever for a young man to deny himself the advantages of learning. Schools are free, and any youth of ordinary executive ability can find the means of sustenance during his preliminary education. If true as intimated, that such students eventually make creditable dentists, it is only because they have by extra diligence after matriculation, gained a certain kind of knowledge which would better have been gained before. No man of proper spirit will allow himself to be debarred from his chosen profession on account of reasonable conditions governing his matriculation.

It may seem an act of charity to admit an applicant who is worthy in all respects except this—it may appear harsh to refuse him—but let us ask: Which is the greater benefactor: the college with open doors admitting students without a hint of the responsibility which inevitably overtakes them before a complete mastery of the profession is attained, or the college which in the beginning impresses the applicant with a sense of the difficulties ahead and demands that he be properly fitted to surmount them? The question is: Will the student and the profession be better or

worse in the end, for a higher standard of matriculation? No argument is necessary for answer.

The time has come when it should be rendered impossible for a young man to choose dentistry simply from the fact that he is unfitted to enter any other reputable profession. We should impress the candidate with the conviction that the demands of dentistry are as great as the others, and then will we have a class of men who come to us with an exalted idea of the calling, and who may reasonably be expected to reflect credit on the profession.

It may be a nice line of distinction to say just how much shall be demanded of the applicant previous to matriculation, but this matter could be easily adjusted by the various faculties, if only there was concerted action on the question. And right here is the main feature which will more largely influence future standards of matriculation than any other. When colleges have a uniform standard, with rules governing its enforcement, then will the practice of holding out inducements for students through the medium of lax matriculation be at an end. This competition among colleges for an extended student list is a prime source of the evil we are condemning, and until we have uniform requirements the evil will have a strong incentive for existing.

One of the first and greatest reforms needed, then, in dental education is the regulation of this matter of entrance examinations.

Now as to the methods of teaching after the student has been admitted. Much advancement is being made in this respect in some of our colleges, but there is yet room for improvement. One of the most noticeable faults in the ordinary schools is the lack of proper practical demonstration. Theories are in most instances drilled into the student from beginning to end of the term, without much regard to an intelligent application of principles taught. This is a serious defect. The infirmary should go hand in hand with the lecture-room, and should be an important feature in the curriculum. Inasmuch as a great deal of the dentist's work is in the line of mechanics, the student needs to be well schooled in manipulation. The demonstrator—and he should be a man of rare ability, instead of the second or third rate operator we often see in this capacity—should watch the student carefully, and correct faulty manipulation in the beginning. After the student has formed the habit of doing a thing the wrong way it is more difficult to correct him than to teach him properly at first. Small details in manipulation

should not be overlooked. It is no unworthy part in the science of operating to know how to properly pick up an instrument.

Operative and prosthetic technics taught in laboratories specially fitted for the purpose are of untold benefit to the junior student. He can here learn much in manipulation and methods in less time than at the operating chair, and without the necessity of victimizing patients. This system of instruction should be introduced more generally into our schools.

Clinics by the best operators should be frequent and varied, and these will be rendered more effective if the clinician will at intervals in the operation appoint different members of the class to take the instrument and proceed with the work where he has left off. By close scrutiny he can check mistakes the moment they are made, and in this way teach a more lasting lesson than by any other means.

If the students in our colleges could be made to properly apply all the theories taught it would leave little to be desired in the way of college instruction. Lecturers should study the most apt methods of illustrating those portions of their lectures which cannot be demonstrated. Illustration or demonstration will carry a principle home to the mind of a student where a simple statement of facts will have little effect. Diagrams and models should be used extensively and every means employed to hold the close attention of the class. All these minor details are worthy of our notice when considering this subject. Proper observance of minutiae helps to make up a perfect system.

There is now one other question of importance in connection with our colleges, which—more particularly at the present time—forces itself upon our notice. It is a matter for much regret that faculties should render it necessary for the thoughtful men of the profession to criticise the practice to which we are about to allude. Mention has been made of the evil effects of lax methods of matriculation, but what shall we say in sufficient condemnation when the evil extends to lax methods of graduation? It is not our purpose here to charge colleges with ulterior motives for graduating students without qualifications, but when we see numerous instances where young men, totally unfit to practice dentistry, are holding diplomas from institutions generally considered reputable, we are forced to the conviction that there has been at least a carelessness on the part of those who control the examinations—a carelessness some-

times amounting almost to criminality. We are often led to blush for the good name of our colleges when some of these examples are before us, and no college of any credit can afford to lay itself open to censure in this regard. The spectacle of a whole class of nearly one hundred students graduating at one time from an institution without a single failure, is a huge travesty on dental education. It is folly to assume that in a class of that size every individual member is properly fitted for practice after two years' study. Such a condition would be little short of the miraculous, and it is safe to say miracles are not happening in these latter days in dental colleges.

The whole thing is wrong in precept and principle. It encourages the idea that to graduate in dentistry is a very simple matter, and it sends out upon the world a vast number of men who—in the beginning at least—can do nothing but impose on the public. It lowers the whole tone of the profession, and it is lamentable that men holding positions of such responsibility in the profession should so betray their trust. With rules so inadequate governing matriculation, many are drifting into our colleges who cannot possibly be fitted for practice in less than three or four years. It is doubtful if some of them can be fitted at all. With any student, no matter how proficient, two years' is scarcely enough for proper training. A three years' course would be productive of better results and some of our colleges * have recognized this and adopted such a rule.

If we look for the cause of this wholesale graduation we shall see that it is mainly instigated by the same motives which lead to indiscriminate matriculation. Competition among the colleges accomplishes the mischief. So soon as a college establishes for itself the reputation of graduating its entire class, so soon does it draw to its doors a horde of diploma-hunting students, whose main ambition is to obtain their degree with little respect for the amount of knowledge they are likely to acquire. Such colleges wax fat in numbers and proclaim loudly of their unqualified success; but their methods are simply a most vicious form of quackery and in due time their sins will find them out. We hope for the day when the profession will rouse itself to the magnitude of this evil, and by virtue of a righteous indignation place a restraint upon such methods.

* Since the above was written the National Association of Dental Faculties of the United States has inaugurated a three years' course.

And this brings us quite naturally to the final point for consideration in this paper : What are our future necessities, and future hopes ?

By reason of the rapid development taking place in dentistry, our future necessities in dental education become a matter of much moment. Unless the present standards are raised in keeping with our professional progress, the time will arrive when the man who wishes to become thoroughly versed in dentistry must gain the greater part of his education after he has graduated. Our dental educators should look ahead and shape their course accordingly. It will not do to settle down into a hum-drum system when the main body of the profession is advancing so rapidly in new ideas.

Some of the conditions of the future must include a greater safeguard against admitting men to study who have no qualifications—natural or otherwise—to commend them to the profession ; a more careful attention to details in instruction ; a more disinterested devotion on the part of faculties ; and above all things else, a more thorough scrutiny in final examinations, to the end that men shall not go forth on the world till they are fitted to fulfill the mission for which they are sent.

Our future hopes are in large measure based on the fruition of these necessities, and as we look carefully over the history of the profession in the past, and study well the status of the present, we are constrained to believe that despite all the imperfections of to-day, the future holds for dentistry an honorable position among the professions of the world.

The evils which we now lament are of a nature easily remedied, and we have faith enough in the integrity of those in whose hands the remedy lies to believe that when brought forcibly to their notice, existing wrongs will be made right, and we shall go forward toward perfection even more rapidly than in the past.

What better augury of our future prospects need we have than the very occasion which has called us together at this time ? Is not an International Dental Congress a step marking an era in the history of our profession ?

Is it not the culmination of that which is past ? Is it not pregnant with hope for what is to come ?

The profession has now reached a point where its own impetus will carry it forward. We of the latter day are called upon simply to guide its course, to steer it clear of error, to see that when it

moves it moves aright. Our trust is sacred beyond compute. It is hallowed by the hopes and joys, the fears and cares of those who have gone before. It is enshrined in the fond desires of those who are with us now. It is dedicated to the weal or woe of those who follow us.

And in all the weight of circumstance or deed ; in everything that lends the force of influence, good or ill ; in all the causes, present, future—great or small—no one thing will have a stronger bearing on our growth, through years to come, than that which has formed the subject of our thoughts to-day.

To education then we must look for the fulfillment of our future hopes, and is it not meet that we, on this, one of the most noteworthy events yet recorded in the history of our profession, dedicate ourselves to the furtherance of principles, lofty in purpose, broad in conception, unlimited in possibilities? If this be done—if dental education be lifted to a higher plane—it will be at least one thing to make memorable the holding of the First International Dental Congress of the World.

THE DIFFUSIBILITY OF MEDICAMENTS IN LIVING AND DEAD DENTINE.*

By A. W. HARLAN, M. D., D. D. S., Chicago.

For many years the preliminary steps in the disinfection of dentine in pulpless teeth by the use of medicinal agents was one of routine, seldom varying from the soaking of the pulp canal with wood creosote, carbolic acid or combinations of the above with iodine or solutions of zinc chloride. The only theory in support of this practice was that the agent or agents used were antiseptic, and must perforce accomplish the end of their introduction by hazard or otherwise. They were packed into teeth under conditions very unfavorable, and were covered for the most part with wax, mastic or sandarac. The dressings were changed daily or every other day, as convenience indicated, and the suffering patients of those days considered themselves exceedingly fortunate if at the end of two or three months the "tooth" or abscess was pronounced cured and it might safely be filled with a temporary filling. This sort of unscientific disinfection and antiseptic treatment of abscesses and root canals still prevails to a limited extent in some of the larger cities in America, and still more largely in

* Read before the First International Dental Congress, Paris, France.

the remote towns and villages situated at a distance from the centers of population. I was among the few who had the temerity to suggest that such practices were only of those that should be labeled antique and be preserved along with other relics of the past.

I will endeavor to show now that however useful a practice may have been in the past, it cannot be of equal value to one that is capable of demonstration to be vastly its superior, not only theoretically, but scientifically and practically.

A tooth containing a living pulp, which must be destroyed to retain it in the mouth, does not need disinfection in the same degree that one does in which the pulp has long been dead. The canal should be kept aseptic from the beginning, but it does not need "treatment" for it is not foul from the generation and absorption of mephitic gases in its central chamber. It is here laid down most emphatically that nothing should be allowed to enter a cavity in a tooth, or the pulp chamber or canal that is not absolutely sterilized, from the application of arsenic or other corrosive or means of destroying the pulp until the root is filled. You may say that this involves labor or detail. It involves both; but it is better practice and safer for the surgeon and his patient, it insures a longer period of usefulness for the tooth, and greater comfort for its possessor. If the ordinary practice is pursued of making an application of arsenic to the pulp or its equivalent and the cavity is allowed to remain open even for one day, the root canal is contaminated, and disinfection becomes a necessity.

DISINFECTION.

All substances that produce a filmal coagulation are not easily diffusible and fail to produce complete disinfection of the interior. This is particularly true of dentine. After the pulp is freshly destroyed and removed and the hemorrhage has ceased, if instantaneous disinfection is produced by a powerful coagulant and the root is filled at once, no harm will ensue from the use of a coagulant.

The dentine is uncontaminated and the coagulum produced not having been brought in contact with moisture or anaerobic microbes is in a condition to remain aseptic for all time, unless again exposed to external agencies, through recurring decay, or insecurity of the temporary filling used to protect the tooth until a more permanent operation is deemed a necessity. It may be well to point out here a source of danger for the contamination of dentine not previously written upon or spoken of by any observer. We will suppose that

the most rigid steps have been taken to insure an aseptic canal from the destruction of the pulp to the filling of the root, including the use of a coagulator, creosote, carbolic acid, or chloride of zinc or other substance, the cavity in the crown is sealed with a leaking filling and the dentine of the crown becomes contaminated by moisture from without and bacteria. In a short time the coagulum is broken down by the microbes, the dentine is infected and when the crown is finally filled with metal the infection is not removed or disinfected completely and the tooth finally discolors and the dentine of the whole root becomes infiltrated with the gases of decomposition from this slight error, so easy to prevent with a little more care in the beginning. The most rigid care must be exercised step by step and no loophole of infection must be left for the entrance of bacteria into direct contact with dentine in a pulpless tooth. It will be seen further along that this is a good argument in favor of non-coagulators of albumen in disinfection of dentine.

DIFFUSIBILITY.

In living dentine, substances that will coagulate albumen are much used, mainly for their obtunding properties of living matter, and secondarily as antiseptics. As a step toward the destruction of microbes this is excellent practice, and it will stand the test of scientific scrutiny, as long as the filling does not leak by reason of accident or expansion of the metal composing it. But the instant fluids and microbes enter the interstice between the filling and the dentine, the coagulum is rapidly broken down and a progressive redecay is commenced which in the end will result in the destruction of the tooth. The reason for this is that all coagulated surfaces are more readily attacked by microbes than surfaces which are not so coagulated, the coagulum is in a measure dead; it has lost its vitality and is not able to resist the solvent power of the excreted or soluble ferments with which it is brought in contact. This is proven in many ways. First by the worn ends of teeth, as when they are abraded by over use or the excessive hollowing produced by the chewing of tobacco or the wearing away of the proximal surface by the use of toothpicks; and second, by filing and accidents which expose the dentine. These surfaces are not always smooth, many of them are irregular, but in spite of this such surfaces are remarkably free from a beginning caries. One reason for this is that the dentinal tubes and contents are not coagulated. If the dentist at this time should try the experiment of applying

silver nitrate or zinc chloride to such a surface and repeat it two or three times; even with the greatest caution the tooth will decay. It inevitably decays. The coagulum furnishes the niches for the lodgment of microbes, and the work of destruction begins.

An exposed vital surface of dentine will better and longer resist the action of external agencies, acids and bacteria, than one which has been brought in contact with coagulators. The diffusibility of noncoagulants in living dentine is a demonstrable fact. First, witness the discoloration of dentine, its infiltration, in fact, by coloring matters after the removal of the enamel, forcibly or by attrition. Second, witness the infiltration of dentine by partially disorganized red blood corpuscles after the partial luxation of a tooth and its replacement in the socket. Third, violent wedging of the teeth preliminary to filling has produced it. Fourth, torsion has been observed to produce a pink color of the tooth, which gradually disappeared, leaving the pulp alive. Fifth, the impaction of a large gold filling has been known to produce a like result. The above and even other examples not cited are proof positive that this is a fact incontrovertible.

The nearest approach to further proof of the diffusibility of foreign substances in human dentine may be seen in examining sections of dentine affected by external caries, in the discoloration of the well-known zone of decay of Tomes, Magitot, Leber and Rosenstein and others. The proof of the internal diffusion of coloring matter in the teeth of ruminants is on their being fed with madder and the complete discoloration of the dentine.

These teeth have not persistent pulps and hence the coloring matter must have been distributed through the pulp or peridental membrane, or both. With these evidences before us of the permeability of living dentine, I will offer an easily proven experiment to supplement the above. Take a freshly extracted tooth and remove the pulp, seal the foramina, if there be more than one, then drop with a pipette, water highly charged with hydrogen sulphide, two or three drops in the pulp canal and chamber and seal this within the tooth hermetically. This may be done with a platinum plug moistened with gutta-percha, dissolved in benzol or eucalyptol; drop the tooth into a tube containing distilled water, free from sulphur. Cork the tube and allow it to remain for ten minutes; do not agitate it. At the end of that time test the water for sulphur and you will find it. You may reverse this experiment, sealing the

uncontaminated water in the pulp chamber and canal and dropping the tooth into the water charged with H_2S . Sulphur will be found in the water in the center of the tooth. Experiment 2: Take a freshly extracted tooth, remove the pulp, dry the canal, bathe the interior with 95 per cent carbolic acid, absorb the excess, seal the foramen as before, place a drop of the H_2S water in the pulp chamber, seal as before, drop into the distilled water, let it remain ten—twenty—thirty minutes, or longer, and you will not find a trace of sulphur. Reverse this experiment and the result will be the same. Experiment 3: Take a tooth as above, remove the pulp, seal the foramen, place a drop or two of oleum cinnamomi in the canal and pulp chamber, seal the cavity as before, drop the tooth in glycerine (Price's), allow it to remain fifteen minutes; test for cinnamic acid and it will be found in the glycerine.

Reverse this experiment and the cinnamic acid will be found in the interior of the tooth. Experiment 4: Take a tooth as above, seal the foramen, bathe the canal and pulp chamber with oleum cinnamomi, place one drop of the H_2S water in the canal and chamber, seal as before, place the tooth in a tube containing distilled water as before, allow it to remain 15 minutes, test for sulphur, it will be found in the water. Reverse this and sulphur will be found in the interior of the tooth. Other experiments with oil of cloves and cajeput were made with a similar result. Creosote and zinc chloride were used as further examples of coagulants in prohibiting the diffusion of substances into and through dentine. These experiments were numberless with reference to true coagulants and non-coagulants, and by them I desire to draw the following deductions:

First. Oleaginous non-coagulants for living dentine are better preventatives as antiseptics beneath fillings than coagulants, as they do not destroy the surface with which they are brought in contact. They also permeate the dentine, without irritating it, and are capable of depositing camphors which are powerful disinfectants.

Second. Oleaginous non-coagulants by their diffusibility through dead dentine completely disinfect it, and by their perfect diffusion prevent discoloration of the tooth as they are not solvents of the pigments or sulphides which may gain access to or be found in the pulpless tooth.

Third. Coagulants prevent diffusion not only of themselves but

of substances which may afterward be brought into the interior of a tooth.

Fourth. Diffusible medicaments through their non-coagulating properties, offer no mechanical obstruction to the exit of fluids beyond the apices of roots, example blind or cold abscesses.

Fifth. The experiments of Dr. Black, of Chicago, verified by myself prove that non-coagulants are among the most potent antiseptics and disinfectants. and the necessity does not exist in view of this to use coagulators which are less efficient as agents for disinfecting infected dentine.

If coagulants are to be used at all for purposes of disinfection of dentine, they must be diluted with non-coagulants to a degree that will render them valueless for the purpose of coagulation.

BABBITT METAL VS. COMMON SENSE.

BY L. P. HASKELL, D. D. S., CHICAGO.

In the December REVIEW appears an article under the above caption, by Prof. Case, of Jackson, Mich., which I cannot allow to pass unnoticed.

Those who do not know me would suppose he was addressing his criticism to some recent graduate of little experience, who had "caught on" to some new idea, and was working it for all it was worth.

It would seem that forty-five years' experience, exclusively in Prosthetic Dentistry was of no account. Seven years' teaching in dental colleges,—eighteen months' experience in a post graduate school, where most of the students are practicing dentists, several of whom being over fifty years of age, of long experience in dentistry as well as in the use of zinc for dies, but all of whom now realize the non-necessity for its further use, and have gladly substituted Babbitt Metal, would seem to demonstrate that my ideas upon this subject are correct. Not only this but several colleges and thousands of dentists have adopted the method, with entirely satisfactory results.

The fact that other colleges still continue to instruct exclusively in the use of zinc, demonstrates one of two things: either the teachers have tried a Babbitt made from an improper formula, and consequently had unfavorable results, or else an extreme conservatism, or indifference, has failed to try it at all.

Dr. Case seems to think its only merit is found in melting at a lower temperature than zinc. This is perhaps its least or most unimportant method, but is desirable from the fact that *oiled* sand can be used without burning the oil too much. The advantages of oiled sand are these: First, being always ready for use; second, no danger of bubbles in the metal; third, the sand can be packed harder, and consequently a better mold is secured, and less liability of injury to it in removing the model. But aside from this I assert, (it may be "autocratic") that it is the only metal that has *all* the requisite qualities for a dental die, viz: nonshrinking; while not as hard as zinc, yet sufficiently hard; tenacity and a smooth surface. There is no difficulty in pouring upon it lead with one-sixth tin added. The tin has another advantage in the fact that pure lead is too soft for the counter-die.

As to expense, while it costs more than zinc, it will last much longer, making more dies, not oxidizing as that does unless carelessly overheated.

There has been a great amount of ink wasted discussing the subject of "plaster expansion." Theoretically it is true, but practically I find it of no account. Did it ever occur to these theorists that the expansion of the sides of a cavity contracts the space, and this when filled the expansion of the model offsets the expansion of the impression? I have often found, in certain cases, that I could secure better results with a swaged plate than with rubber. The trouble with misfits in rubber plates I believe is owing to the expansion in vulcanizing and contraction in cooling of the rubber, as Dr. Geo. B. Snow has so admirably demonstrated.

I believe a plaster impression correctly represents the jaw, and that if my plate fits the model from that, it will fit the mouth. This principle I have acted upon all these years with the most satisfactory results. Of course this statement is "autocratic" and lacking in "modesty," and I *may* not know when a plate fits the jaw. With such an experience it is not strange that I should assert myself with a good degree of positiveness, and feel regret that students, with so much ground to cover, and so little time to learn, should be put to unnecessary annoyance in doing what otherwise is a simple thing.

As to the matter of casting into an impression of nonexpansive, noncontracting material, of course it can be done, and with Teague's impression material very nicely, but as stated in the article

referred to, it has, to me, a serious objection. I want a plaster cast to work to, and if I get that, I cannot cast the die in the impression. If I take two impressions, there will most always be some movement of the membrane at some point so as to make them differ just enough to prevent the plate from fitting both, and as the use of Babbitt and oiled sand simplify the making of dies I can do it quicker than to wait for the impression to dry sufficiently to cast into it, and with as good results.

Some whose experience has been exclusively with *wet* sand, and perhaps with models not properly shaped for drawing readily from the mould, as is taught by some, even the "peer," I am sure might learn, even against their will, something to their advantage. But then, "none so blind as those who won't see."

I may say that nothing in my professional life has given me greater pleasure than to realize that I have been of some aid to my fellow dentists in helping them to do work more easily as well as better, evidence of which I am constantly receiving orally and by letter, from dentists all over our own and other lands.

THE PERIDENTAL MEMBRANE AND APICAL PERICEMENTITIS.*

BY W. P. DICKINSON, D. D. S., MINNEAPOLIS, MINN.

In the study of anatomy we find a full classification of the articulations comprehensively arranged in classes, and sub-classes or varieties.

The second class comprises those where the bones are said to be "immovably connected together," in other words, an articulation without motion. Examples of the various forms of this class may be seen in the *sutura*: the sutures resembling the teeth of a saw, the coronal, sagittal and others of the cranium. The *squamous*, where the bones overlap each other, as the temporal and parietal. The *harmonia*, where the contiguous surfaces of the bones come together without any serration, and with a smooth or nearly smooth surface, as in the nasal, superior maxillary, and palate bones; the *schindylesis*, another variety of suture by which one bone is received into another—as the vomer, ethmoid and the sphenoid; and the *gomphosis*, which is described as "a species of articulation where the bone is fitted to another, after the manner of a nail that is driven in a board." The teeth are said to be specimens of this

* Read before the Minnesota State Dental Society.

variety. For the purpose of rough classification, this description relating to the teeth may suffice ; but in any consideration of the immediate attachment of these organs, we do not speak of them as *immovably* connected with the alveolar process, or that the attachment is one *devoid* of motion, for they are capable of, or permit, a passive motion by the interposition of the peridental membrane ; which, besides other functions, acts as a cushion protecting the teeth from injurious concussion in the act of mastication. This structure has received various designations, but all are sufficiently self-explanatory, so none need be confused as to their meaning whenever they are met with ; thus we have :

Periosteum Dentium.

Alveolo-dental periosteum.

Root Membrane.

Periosteum of the Alveolar Cavity.

Pericementum.

Peridentium.

Dental Periosteum.

Peridental Membrane, and others.

In order to discriminate between normal and abnormal conditions of any part or organ, it is necessary to possess some knowledge of the structure and functions of them ; otherwise our conclusions might be based upon false premises. The peridental membrane, then, is a fibrous connective tissue (richly supplied with nerves and vessels), which envelopes the teeth and lines the alveolar cavities. It is usually spoken of as "identical with the periosteum, which covers all bones ;" but a recent author says that "in its structure it is very different from a periosteum, and its functions are different" also.

The functions of the periosteum are protection to the bones, a support to the vessels which enters the same, a "membrane concerned in the nutrition of bone," and holding in some parts of its network embryonal cells for the supply of the needs of the tissues which it envelops or connects, "and gives insertion to ligaments and muscles." This I think is a fair and comprehensive enumeration. The functions of the peridental membrane are: First. A support and cushion to the teeth against injury from shock in mastication (as before stated). Second. A medium through which the sense of touch, or contact is communicated to the mind—by way of the nerves which ramify its substance in every direction ;

and third, the double duty of maintaining the vitality of the cementum on one side and assisting in the same for the alveolar wall on the other.

The arrangement of the fibers in the peridental membrane is such that they "serve to swing the tooth in such a way, that while it is permitted a slight motion in its socket in any direction in response to a strain that may be brought against it, its position is regained at once when the strain is removed." This accommodation is effected by the fibers which cover the greater part of the root, having a direction obliquely from the cementum to the alveolar process; the deeper end being attached to the cementum. This disposition is maintained from near the apex of the root to where they approach the rim of the alveolar process; here the fibers reverse the order and turn outward, gathering into a rather thick mass as they merge into the periosteum on the outer face of process. This mass is sometimes termed the "dental ligament."

At the apex of the root of the teeth, the distance between the socket wall and the tooth is greater than at the sides of the roots. This is designated by Prof. Black the "apical space," and the relations of the parts here have an important bearing in the treatment of peridental disease.

I spoke above of the fibers of the peridental membrane having a direction obliquely upward from the tooth to the alveolar wall. In this space "the fibers radiate from the apex of the root to the alveolar wall in various directions without much regularity; yet it can generally be seen that there is a disposition to do so in a fan-like form, filling the space completely." The blood supply of this membrane comes by way of this apical space, usually by one arterial branch for each root. Here it breaks up into several smaller branches, one of which enters the apical foramen to supply the pulp, while others pass on through the substance of the membrane nearly midway in its thickness, giving off still smaller branches which pass still further into the alveolar walls, and anastomose freely with the arteries that supply the gums. It may be seen from this that the blood supply to the membrane is ample, even though the vessels at the end of the root may be completely destroyed as they often are in cases of alveolar abscess.

In relation to the nerve supply to the tissue under consideration. The briefest and most definite description I can give is, "that it is derived from two sources, one corresponding perfectly with,

or accompanying the blood-vessels; the principal supply however, seems to be from the direction of the gums and through the alveolar wall. This may not so plainly appear from anatomical examination, but experimental observation demonstrates that the sensibility of the peridental membrane is not appreciably impaired by the destruction of the nerves in the apical space." Clinical experience gives us many cases also where teeth remain for years, doing unimpaired service with perfect sense of touch, after the destruction of all the vessels and nerves at the end of the root. This would not be the case if the only avenue of nutrition and sensation was from that direction.

That the peridental membrane is the seat of several forms of disease, is a fact beyond question. It is only within a comparatively few years, however, that there has been any very extended investigation in relation to the nature, cause, or progress of the affections of this membrane, and even at this date there are some that make their attempts at treatment without recognizing the different and distinct causes which may result in some one of the various well defined and definite disorders.

While it is true that we are acquainted with a variety of conditions, properly called diseases, to which this tissue is subject, no classification yet made, says Prof. Black, "is free from objection; yet, a classification, if not perfect, will assist the comprehension of the details of the subject.

That we may have some idea of the amount of the research and observation made by this indefatigable student and author, I will outline his classification, which he makes under seven general heads, as follows:

1st. "Traumatic pericementitis, or inflammation of the peridental membrane resulting from injuries."

2d. "Absorption of the roots of the permanent teeth.—

(a) In diseased conditions of the peridental membrane.

(b) After injuries and transplantations, implantations, &c."

3d. "Pericementitis, having its seat in the apical space."

4th. "Alveolar Abscess, as a result of sequel to apical pericementitis."

5th. "Gingivitis—inflammation of the gingival border of the gum and lower border of the peridental membrane, occurring mostly from constitutional causes, and including salivation from mercury, iodide of potassium, etc."

6th. "Calcic inflammation of the gums and peridental membrane, dependent upon the deposit of salivary and serumal calculus upon the necks of the teeth," and

7th. "Phagedenic pericementitis (Pyorrhœa alveolaris), a specific, infectious inflammation, having its beginning in the gingivæ and accompanied with destruction of the peridental membrane and alveolar walls."

Until within the past quarter of a century there is really but little of value recorded, as the result of systematic research, in relation to the nature and causes of peridental affections, and that which has the most value has appeared within the last half of that period. In view of the grave nature of them, it is not a little surprising the subject has received attention from comparatively few, who have made record of *original* investigations; but those who have written, present us a resumé full of interest and instruction. In the classification above given, we find "pericementitis having its seat in the apical space." As it is frequently met with in practice, and is certainly not always recognized, we will endeavor to give the distinguishing characteristics, as a help in diagnosis. Apical Pericementitis, then, (as the name implies) is an inflammation of the peridental membrane having its beginning at the apex of the root. The peridental membrane, you remember, occupying the apical space, is *thicker* than elsewhere about the tooth; it is richly supplied with nerves, and, while in a normal condition, is not specially sensitive, it becomes *excessively* so when inflamed. This may be explained by the fact, that occupying the space between the root of the tooth and the alveolar walls, very little expansion is possible when engorged with blood; and the consequent pressure upon the nerves within the tissue causes the painful sensation.

It is scarcely probable that much inflammation takes place in the apical territory until after the cessation of vitality in the pulp, though some authors incline to the opinion that there may be a direct extension from a pulp inflamed beyond hope of recovery, to the tissues outside of and in the immediate vicinity of the apical foramen.

The initial stage of the disease is either a pressure of the gas from a decomposing (putrescent) pulp, which mechanically forces or separates the membrane from its attachment to the cementum just around the foramen; or it is an inoculation from the same

decomposing pulp, which is forced through the foramen by the expansive action of the gas.

It is not always the case however that pericementitis follows the death of a pulp, for we sometimes have spontaneous devitalization and a drying up (or "mummifying") of this organ without unpleasant sequelæ—at least for a long period of time. (I use the term "spontaneous" here in the sense of an unrecognized or unknown cause.) Such teeth however, are not proof against an attack of the disease, and should receive antiseptic treatment as a prophylactic when discovered. Apical pericementitis, with the usual concomitant or sequel, "is the most painful affection to which the teeth are liable." The symptoms of the acute form are usually a dull pain referred to the proper tooth, with great tenderness to pressure by the occluding teeth. The thickening of the membrane at the apex of the root by the increasing inflammation and determination of blood to the same, slightly elongates the tooth in the socket, so that any jar or sudden pressure upon it by the opposing teeth causes excruciating pain. The looseness of the tooth in these cases is due to its being lifted a little above its normal resting place; the tension on the fibers of the peridental membrane is lessened, and a perceptible vibration is the result. In the earlier stage of the attack gradual and firm pressure relieves the pain temporarily, but it recurs with increased severity. Any active bodily exercise, such as hasty walking (and sometimes the application of heat), augments the distress. As these symptoms increase fever sets in, the pulse becomes more frequent, the tongue is furred and the appetite fails.

This period may continue three or four days or may culminate in twenty-four hours, owing to the constitutional peculiarities of the individual. Then "the mucous membrane over the affected root begins to show signs of inflammation—taking a deeper color than the surrounding gum tissue—and is painful under *any* pressure; following this, the gum takes on a purplish hue and the pain becomes continuous and throbbing, every pulsation of the blood supply appearing to aggravate it, especially when the patient assumes a recumbent position." This condition of affairs cannot remain long without result, so at this point when human endurance seems to be taxed to its utmost limit, a chill (more or less severe) sets in, and by this token we may be sure the boundary line between pericementitis and alveolar abscess is reached, for now the

first pus is formed. The lip or cheek becomes swollen, often producing marked disfigurement, and sometimes effecting complete closure of the eyelids; then "the pain materially lessens and assumes a more or less dull and intermittent character." Now, after detailing the symptoms of this peculiar form of pericemental disease, it might be inferred that a tooth once attacked by it would be beyond help and the sooner extracted the better; on the contrary, a *very large proportion* of them can be saved for years of usefulness, even after the disease has culminated in abscess. It only requires the requisite knowledge by the practitioner and the patient's confidence in him, with a willingness to co-operate in all measures instituted for relief; this latter is, unfortunately, not always given, because of impatience for *immediate* relief, and a failure is the result. So much for the acute form.

"Chronic apical pericementitis has all the characters of the acute variety in a modified form." There may be considerable soreness in a particular tooth, or it may only occasion a slight annoyance—it may continue several days at a time, or indefinitely, or it may come and go, lasting only for a short period at each visitation. Sometimes there are no *visible* signs, and at others there is a marked congestion of the gum, but in *all* cases there will be some sensitiveness to pressure with the finger over the root of the affected tooth; *none* will be sensitive to thermal changes, for the pulp will be dead in every case, so, if the tooth *does* respond to thermal tests, "such sensitiveness is sufficient for the exclusion of this affection from the diagnosis." The cause for both the acute and chronic forms of apical pericementitis, I remark again, is always some irritating agent that gains access to the apical space by way of the dental foramen.

Now, a word only in relation to treatment of dental diseases, and I will leave the subject in your hands for consideration. Local medication seems to be the sole reliance of almost the entire profession in all cases coming before them. This should not be so, because, by an intelligent combination of both constitutional and local treatment, a favorable result would be reached more speedily in many, if not in most cases.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

Regular meeting, December 2, 1890, Dr. C. N. Johnson, President, in the Chair.

Dr. J. H. Woolley read a paper on THE ART OF EXPRESSION IN ITS RELATION TO PROSTHESIS.*

DR. C. P. PRUYN said: Having had the opportunity of reading the paper before its presentation here this evening, I have tried to think of what I ought to say in opening the discussion. I have tried to get my thoughts together to see what I might add, and I find that there is not much that I can add or say that will be of interest to the members of this society. This thought, however, has occurred to me, as I think a little along this line, that there appears to be a great deal more to dentistry from year to year the more I see and know and practice the art. Here we find that a man needs to be a sculptor as well as a man of delicate manipulative ability with a plugger or excavator; and I do not know that the remarks of the essayist of the evening are far-fetched when he alludes to the subject of sculpture as related to dentistry.

One of the best dentists in the United States in this particular line, notably Dr. Norman W. Kingsley, whom you all know either personally or by reputation, has worked along as a sculptor for years and his success has come to him largely through his knowledge and ability thus acquired.

I remember a short time since hearing one of my friends relate an incident that happened in his office. A gentleman, a skilled artist, and something of a sculptor, called on Dr. Kingsley. He did not know that he was a dentist; he thought he was an artist in this particular line. He spent some hours with him in his parlor talking about art. Dr. Kingsley told him that at one time he made in plaster, first in clay, his ideal of what he considered the Christ to be. He worked on it for days, weeks and months. He wrought out what was to him something very fine, and I suppose it was to him the embodiment of Divinity. Unfortunately that fine piece of work was completely destroyed. He said he had never been able to reproduce it. He said his ability to execute that piece of work seemed to come to him as a special inspiration, and he could not

* See page 12, January, 1891, number of THE DENTAL REVIEW.

account for it in any way. He could not by any means reproduce that fine piece of work.

Now, he took this up as a pastime several years ago when a young man, hardly knowing that he could make use of it in his specialty as a dentist. But he has worked at it and has made it of great service to him in the replacing of natural teeth. Now, I do not know that you or I will ever attempt modeling in clay as a means to help us in our work; but this we can say, we can give due credit to those gentlemen who have worked out this thought as it has been expressed to us this evening by Dr. Woolley. Any man who takes up any particular line of thought and carries it through and makes it of service to him in his own particular work, to him is due credit. Suppose he does go beyond the rank and file of the profession in that particular line, I am glad he does, we cannot expect to succeed in all lines; we cannot all become great in all branches of our profession. It is possible for us to become great in one particular line, and in that line of work we can find recreation as well, make it a diversion from our usual vocation.

Another gentleman in the profession has tried to elucidate this same thought in a different manner, from the neighboring State of Indiana. He has gone about it in a little different way, but trying to carry out the same idea. His plan has been to place the patient in a chair and sketch the face in ease and repose without the teeth there, with sunken features, then he goes to work and restores these features upon another piece of canvas or whatever he may use, so that there are the features unrestored and the features restored to their natural contour. He excels in this direction. He thinks it is the way to do. He obtains excellent results in this way. I do not know that you or I will ever succeed as artists with the brush in doing the work he does. He is beyond us in this particular line of work, and he is doing work that will be of service to him and the profession.

When a gentleman comes before us with thoughts out of the usual order and presents them to us, even though we may not fully agree with all of them, nevertheless I feel like saying, all hail to such men who will go beyond the beaten tracks of the profession. We want something more than the usual routine of life, experience and practice. Something of this sort cannot but be of service to us. We will think of it the next time we prepare a practical case for the mouth—think of the suggestions that have been made;

how to restore sunken features; how to adapt in a certain way to show off the effects we should have.

How sad it is, when we ride on a street car, to look at people wearing artificial teeth. You will see a person not talking, sitting in calm repose. You see at once "shop" or "store" teeth, and you feel sad to think that one of your brother dentists should have maltreated a patient in that way, making her look hideous with features sunken. It is not right. It is not as it should be. Of course, you may raise an objection, and say, how can it be otherwise with these \$6.00 and \$8.00 teeth? Can I give sufficient time to do this work, as suggested by the essayist of the evening? Can I model in clay? Can I afford to do it? I do not get money enough out of it. Such objections are plausible, but we will say, suppose you do not get just the money you want. Suppose you do not go to the extent that Dr. Woolley has gone, you can approximate to a certain extent the ideas he has advanced and your patient is made better for it, and you are made better as a professional man.

DR. GARRETT NEWKIRK: I have been much interested in the paper and in the ideas advanced, and I think as Dr. Pruyn does, that Dr. Woolley is entitled to a great deal of credit for having gone into this subject and given us the benefit of his thoughts. It strikes me that the most that can be expected of the ordinary practitioner is that he should know certain cardinal points. First, as Dr. Woolley has suggested, the length of the teeth; second, the natural protrusion of the lips and cheeks, and third, the restoration of the lost parts as near as he can by his close observation,—to measure with his eye, and reproduce in his thought the original contour of the alveolar arch and the teeth connected therewith. By using trial plates much can be done, and when he gets a natural expression he should be satisfied. I think the great trouble with us is that we do not take pains enough and time enough to study each case, because it is largely for cheap work, and we wish to do it in a hurry.

DR. E. M. S. FERNANDEZ: I admire the paper very much, and the remarks made by Dr. Pruyn were good indeed. I hope what I shall say will not be misunderstood as opposing the ideas advanced in the paper. But I think I have some practical ideas which it is my duty to give you.

In the first place, I find that all of this kind of work—prosthetic work—regulating appliances, bridge work and hundreds of other

things in the line of mechanical work which we do in dentistry, works like a charm on paper, but when we have the patient it is an entirely different thing. Let us take, for instance, the picture of the man before us with his teeth out. In order to see him as represented he would be about 10 or 16 years of age, but more probably he will come to you when he had reached the age of 40 or 50. That is one of the impossibilities connected with this work. You may tell a person to sit in the chair, make a drawing of his face on paper, and then not get him when he needs any work done. So your time is lost. I have reference now to a paper that was read before this society a year ago. I am not condemning the ideas advanced in Dr. Woolley's paper, because I think they are the ones that lead us on to advancement in our work. They are just the ideas we desire brought out here.

Let us take, for instance, such a face as we see illustrated on the board—a young gentleman 22 or 23 years of age. Suppose this face here (illustrating) was about the same age, with teeth all gone, and after he has grown ten or fifteen years older his features have not changed very much, we know the bones of the face will change in contour and are changing right along. Suppose there is ten years difference; the man has lost his teeth by extraction or otherwise, we will find that the nose would not be in the place you see here. The nose would sink back and the alveolar process is gone. It is impossible to restore the features or contour of such a face. Again, take the same face. You have to make a set of teeth for the young man, you have the lower teeth to contend with; the articulation makes it altogether too difficult for you to build up the face properly and get the proper articulation. There is where the difficulty comes in. That is the reason why I say the thing on paper is so different from what it is if made in the mouth of the patient.

We see beautiful pictures in our journals drawn with beautiful mouths on paper with pins and little appliances drawn to them, but it is impossible for us to find patients like the cuts we see. You might search for a patient all your life and not find one to put your appliances on. Nevertheless, we learn a good deal by such cases as we see before us. Take for instance, twenty-five different expressions—take photographs and work from them in clay—reproduce the face from the photograph, and this will give you an idea of the different kinds of features of the face; and in that way when you come to make artificial teeth you will see at once where

the deformity is, and you will have a chance to build it up as well as you can. We have got to study those things on paper. By doing work in this way you will feel the aid of it when you come to practice on the patient. All young men who go to dental colleges should have a knowledge of mechanical, ornamental and photograph drawing. These three I would give him. It is one of the requisites. Through all our professional lives we learn a good deal from drawings. There is where the whole trouble lies with us, in not knowing enough about drawing.

I have never done any modeling in clay, but I have done a great deal of drawing and I find that it helps me very materially in my work ; not only in making artificial dentures, but in regulating appliances, etc. If you draw a person's face and find you have the features, when you have the patient before you for treatment you can see the deformity at once and you can correct it much better than if you had never done any drawing.

I wish now to say a word in regard to not getting proper compensation for this kind of work. If you do not get enough money for a set of teeth, perhaps it is best not make it at all ; at the same time, poor people must have their teeth attended to, and that is the reason why it is difficult to get as much money as we would like for such work. But if a man would go to work and make a set of teeth, do all the work I think he ought to do, and as I believe Dr. Woolley thinks, it might take a week's time besides the time that he would use in making dental appliances, it would be a good thing for study, but it would not do for common everyday practice.

Another point. When I make a set of teeth for an elderly person, if it is a man, I get one of the oldest sons and study the features of his face, and if it is a lady, I take one of the lady's daughters and study her features in the same way, provided she resembles her mother very much, and I find it helps me wonderfully in my work.

DR. J. G. REID : The only thing I can say is that the nearest approach to perfection in this particular line of work brings it down to a specialty. If we have one man that can do this kind of work, it will, in all probability, be advisable for us to turn our work into his hands and let him do it.

DR. LOUIS OTTOFFY : When the essayist replies to the criticisms that have been offered, I would like to have him state if there is

any positive rule to determine the distance from the nose to the end of the chin in a person that is absolutely edentulous.

DR. A. E. BALDWIN: I feel that I am ignorant of the subject that has been presented to us to-night, but I desire to emphasize the point brought out by Dr. Reid, that if there is one man capable of bringing out and restoring the features and expression in such cases as have been reported to-night, we should send our work to him. If I understood the essayist correctly, it is not so much the result as the fact that this work would do us good in our daily work if we studied it. It will help us, and through us help the patient. No one of us should come here feeling discouraged. The way is open to us for further study and investigation, and by studying in this line we will become better dentists, better men, and more capable of solving problems that are to us at present difficult of solution.

I can see that there are difficulties in the way of studying this subject, as has been said by Dr. Fernandez; but there is no royal road to learning; there is no way to learn but delving, and the hardest kind of delving produces the best results.

DR. C. F. HARTT: I am very much impressed with the paper. I have learned a great deal from it, but there was one point that struck me a little unfavorably in the paper, and it is this: Dr. Woolley says that in the case of a man with this morose, unpleasant appearance, he would not give him a calm, pleasant looking mouth. We might go a step farther and instead of giving him a morose looking mouth, tell him to have his hair cut and to think of something pleasant, to think of somebody else besides himself, so that he might go into the world with a pleasanter look in his face. You can make yourself just what you have a mind to.

One other point. It seems quite a fashion now, when you want any extracting done, to send patients to Dr. So-and-So, who can do it better than anybody else. Then, if the patient wants an artificial set of teeth, would it not be better to send her to some one else to have this artificial work done? The same is true of crown and bridge work—some one who is making crowns and bridges all the time might do the work better than you can. What I want to know is, what are we going to do after a while?

DR. J. H. WOOLLEY: I am much obliged to the members for their kind expressions of what I have said to-night. This is work that I have not spent very much time on compared with others

that have gone before me, but I will tell you what I have done. I have spent some of my holidays in working in clay. Then for a year or more I worked in clay at my office as opportunity offered. I have copied from the antique and other models, working up this idea of expression, and if any one has studied in that direction he can certainly appreciate the difference in the knowledge that he gets from this study and that reached by simply following the old ruts as in the past. You will certainly appreciate what it is. Take a model, for instance, or a bust. Your attention is called to the hair, which gives certain strength to the face, a certain curve to the ridges in the face and its contour. You see the effects that the different expressions show on the face; you see how the emotions are expressed and the intellectual faculties.

Now, in regard to making full sets of teeth and getting the proper length. I do not know of any other way than by getting measurements the same as I showed in my description of the division of the face. If you draw one line from the top of the head, and another from under the chin and divide the face into four equal sections, you can easily get the length of the upper and lower teeth, by putting the wax on the trial plate and with it rounding out the face to its natural contour; care being taken to make the 4th section, *i. e.* that extending from the angle of the nose and lip to the chin, equal in length to the 3d section or that reaching from the root of the nose to the beginning of the upper lip.

CHICAGO ANÆSTHETIC CLUB.

The Chicago Anæsthetic Club held its first anniversary meeting at Club Room A. Grand Pacific Hotel, on Thursday, Feb. 5, 1891. One of the important features of the meeting was an amendment made to the Constitution as regards meetings; the club being one of specialty it was deemed best to meet but quarterly, thus allowing time for good programmes and experienced talent. The Secretary reported the death of Prof. A. Anderson, whereupon the president appointed a memorial committee.

The annual address was delivered by Dr. B. J. Cigrand.*

Next meeting of the club at the same club rooms, the first Thursday in May.

*See page 139 current number of DENTAL REVIEW.

MEMORIAL RESOLUTIONS ON THE DEATH OF PROF. ANDERSON.

At a regular meeting of THE CHICAGO ANÆSTHETIC CLUB held Feb. 5, 1891, the following preamble and resolutions were unanimously adopted:—

WHEREAS, It has pleased the Supreme Architect of the universe to remove from our midst our late member Prof. A. Anderson, hypnotologist, of Denmark; and

WHEREAS, The intimate relations long held by the deceased member with the club, render it proper that we should place on record our appreciation of his services as a devout member; therefore be it

RESOLVED, That in the death of the Professor we lose a member who was always active, zealous and willing to work in the interests of the Club.

RESOLVED, That as an honest and upright man, whose virtues endeared him not only to fellow members but to all his fellow workers; the club tenders its heartfelt sympathy to the family and relatives across the sea in their sad affliction.

Committee. { DR. B. J. CIGRAND,
DR. W. J. MARTIN,
DR. H. W. SALE.
B. J. CIGRAND, Sec'y.

THE DENTAL REVIEW.

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C. N. JOHNSON, L. D. S., D. D. S.

A PLEA FOR SOCIABILITY AMONG DENTISTS.

The life of the dentist who expects to accomplish anything in the profession is one of incessant toil. He must both practice and preach—even if he does not always pray. He must every day draw liberally, and sometimes disastrously, upon his nervous energy, and must bear the double burden of controlling the nervous impulses of both his patient and himself.

Labor of this kind constantly pursued without deviation will exhaust the vitality of any man long before his allotted time. A dentist then owes it to himself to take recreation as often as circumstances will admit. It is usually a diversion from the routine of office practice to attend society meetings and fraternize with other men in the profession. Every dentist should be a member of some society. And yet, even society work, with the continual discussions of professional topics, may sometimes grow more or less monotonous. Mankind needs change. On this principle we are heartily in favor of the social features of our societies, such as banquets, excursions, anniversaries, etc.

It is occasionally the case that petty jealousies and discords arise in connection with society work. A difference of opinion is often foolishly made the pretext for bitter personal antagonism, and a cool feeling springs up between two men or two sets of men. This, of course, is all wrong, but it seems to be human nature, and there is no other means so fruitful, in the way of amelioration, as a social gathering where everything in the nature of contention is so

manifestly out of place that no one thinks of raising points suitable for contention. And the beauty of it all is, that the moment there is no contention, it is the easiest thing in the world to forget that there ever was any.

It is a sight fit for the gods to see a lot of dentists, who may have, in one way or another, acquired the reputation of being quarrelsome, sitting elbow to elbow around a beautifully decorated table, with strains of delightful music floating on an atmosphere laden with the perfume of flowers. Not a face but has a smile; not a heart but beats warmer for his fellowman.

Those men wining and dining together cannot be quarrelsome! They have forgotten strife, and are absorbing and disseminating happiness. They have changed from brow-beaters to brothers—from fighters to friends. They are soaring beyond the petty jars and jangles of life and are discovering—mayhap for the first time—the good there is in their associates. These social gatherings are destroyers of dissension—they are the harmonizers of humanity.

And even were there no discords in the profession, we should still have a plea for sociability. Men absorbed only with the sterner duties of life are apt to grow sour and morose. The constant digging for dollars and dimes narrows a man's soul and makes him hateful to his fellows. A professional man should sometimes seek to get as far away as possible from the practical part of his calling; he should develop the social instincts of his nature as much as propriety will permit. It is well for us at times to forget that we fill teeth, that we pump peroxide of hydrogen into pyorrhœa pockets, or that we study humanity's mouth with a view to the proper arrangement of a set of artificial teeth.

In short let us forget that we are dentists and only remember for the time that we are one with the rest of the world—and jolly good fellows to boot.

C. N. J.

ANNUAL MEETINGS.

Very soon, that is, in April, May and June, the various State associations will convene in annual meetings. It is to be hoped that many valuable papers will be read and that they will be discussed by speakers having previously prepared themselves for the task. It is a poor compliment to an essayist to pass his production by with a nod of approval or an unworthy attempt to discuss it. Discussion is the life of a society, even though at times speak-

ers grow heated in the discharge of their objections to the ideas or statements of an essayist. Many valuable truths are uttered in the full discussion of a poor paper—speakers rising to the full importance of the subject—not lowering their intelligence to the platitudes of the compiler or the barrenness of his ideas. Be prepared to speak on your favorite topic; you must have gained some knowledge during the year on some subject, and it is your duty to impart it to others.

DENTISTS IN GERMANY.

On page 195 of this number of the DENTAL REVIEW we publish a translated article on this subject. The careful perusal of the figures there presented would indicate some remarkable condition whereby in an empire having a population less than that of the United States, there should be cities, whose population is 10,000 or over, where no legally authorized dentist is located. Of course in all these cities there are men who extract teeth and who make artificial dentures, but there are none who are authorized to practice dental *surgery* or operative dentistry. This condition would seem to imply what is generally accepted to be true, that Germans are not in the habit of taking as good care of the teeth as Americans; rather than support the view held by some that the teeth of the teutonic race are superior in quality to those of the inhabitants of this country. We do not know of any city in the United States having a population of 5,000 or over, in which there is not located one or more legally qualified dentist. In fact, we doubt if there are any cities in the United States with a population of 2,000, where no dentists are located.

MECHANICAL OPERATING CASE NEAR THE CHAIR.

Visiting the operating room of a dentist in a large city very recently, we noticed a small cabinet that looked like a desk. It was closed for the time being. The dentist shortly opened it and we were surprised to find that it was a miniature laboratory in itself. There were, among other things, a lathe, a bellows blowpipe for crowns and bridge work, a dozen or more impression trays, soldering blocks, and in fact everything needful to construct crowns, bands, regulating appliances, small pieces of bridgework, &c. The dentist explained that he had two offices and a portion of the daily duties from hour to hour were spent sitting in front of this case. It

struck us at once that too many hours are devoted daily by dentists standing at the chair to the detriment of health, and over fatigue of the eyes. If every operator, whose room is large enough, will get a case and have it finished in dark wood so as to be attractive to the eye, and then stock it with the necessary appliances he can make a part of the practice of dentistry a recreation instead of drudgery. His bands and crowns *et cetera* will be more durable, better fitting and generally more satisfactory than they are at present, and there will be greater variety in the daily routine, without any lessening of income. Try it and report. Will some one describe a case and its contents?

THE TENDENCY TO NARROW-MINDEDNESS IN THE PROFESSION.

The labor of the dentist is one of detail. His mind is perpetually concentrated on small affairs. His scope is narrow and his possibilities limited. He must continually think of the minutiae.

We cheerfully admit that the practice of dentistry is a perfectly honorable calling, but we must also claim that continual attention to matters minute, in time begets a corresponding restriction to the mental development of the individual. Let a man spend a lifetime in studying the problem of the proper shape to be given the head of a pin, and what would be the result? He might be perfection on pin heads, but he would not be intellectually capable of grasping any of the great problems of life. And so it is—without wishing to compare too closely the practice of dentistry with the making of pin heads—we may say that a man may be a very fair sample of a dentist and yet be—nothing else.

Recognizing this to be a fact, it should be the aim of the dentist to try to broaden his mind in every way possible. The estimate of a man, and relatively that of the profession he represents, is measured in large degree by the breadth of intellect he displays in his intercourse with the world. Let us candidly face the question and in all modesty ask ourselves what is likely to be the verdict of the world when we are weighed in this balance? Are we as a class capable of impressing humanity with the idea that we are men of learning? Do we give evidence of a broad, liberal conception of life and its possibilities? Are we in touch with the modern requirements of an advanced civilization? Do we stand where the blazing light of the Nineteenth century may shine upon

us without reflecting something to our detriment? In short, can we take a place beside the learning and culture of the world and feel that we are not usurping a right that is scarcely ours?

It is not intended here to reflect on the natural ability of our fellow-practitioners. Dentists are as capable in their way as any other class of men; they have advanced to wonderful attainment in their own especial line; but a man has never quite fulfilled his true mission on earth, he has never touched the heights of human possibility, till he has expanded his energies beyond the narrow limits of his own calling and thrown himself fervently into unison with the great heaving, throbbing heart of humanity.

It has been said—we have forgotten just where—that a man should live more for his calling than for himself. We are inclined to the belief that a man should live more for himself than for his calling, and more than for himself or for anything else should he live for the world at large. It is folly to believe—as is sometimes intimated—that the seeking after knowledge in general militates against the acquirement of knowledge in special. A man does not need to be thinking constantly about the teeth in order to be a good dentist. As a rule, the broader a man is the better he is, no matter in what department of life he labors.

A dentist should mingle much with men of other professions. He should endeavor constantly to come in contact with the leading minds of his age. He should absorb knowledge from every source, and be able to grasp the import of all the great movements of the day. He should aspire to something loftier than pin-head attainment, and should content himself with nothing short of leaving his imprint on the history of his generation.

It is well to be a good dentist—it is better to be a model man.

C. N. J.

DOMESTIC CORRESPONDENCE.

A CORRECTION.

CHICAGO, February, 2, 1891.

To the Editor of the Dental Review;

Sir:—The Committee on Dental Science and Literature in their last report at the meeting of the Illinois State Dental Society, made this statement regarding M. Paul Dubois late book, "*Aide Memoire du Chirurgien Dentiste.*"

"It is said that in this book there have been copied without credit, original designs illustrating two forms of alveolar abscess by one of our members." A short time since a letter was received by a prominent member of the profession in Chicago from M. Dubois in which the statement is made that lack of credit was due to an oversight, and that he had made, previous to the publishing of the report an announcement in one of the American journals explaining the matter. The committee overlooked the correction otherwise the statement would not have been published.

T. L. GILMER, Chairman, 1890.

MAKING HAY WHILE THE SUN SHINES, AND EVEN WHEN CLOUDY.

"If a man is competent—by all means graduate him; if he is not—stop him.—*C. N. J. (Review,) Jan., 1891.*

The writer of this article in common with many other members of the dental profession in the Northwest, indorses to the fullest extent the above quotation from the "danger signal," over the initials, C. N. J. The writer also believes that C. N. J. has a perfect understanding of the subject regarding which he wrote, and that in writing, he was actuated through regard for the best interests of the profession, not only in the Northwest, but throughout the world. His facilities for a study of the subject have been second to none, and he evidently knows whereof he writes.

It is one thing, however, to call attention to abuses, and yet another thing to expect that the slightest attention will be paid to any complaints which may be made, as long as the purely commercial spirit which at this time governs the colleges, is allowed full play. At the present time, any college which makes an honest endeavor to do honest work, is apt to find itself in a languishing condition, more or less when compared with those making a specialty of numbers of its students. The writer does not intend to convey the idea however, that because a college has on its list a small number of students, it must as a matter of course be doing honest work; far from it. Some of the colleges at present in existence, did not apparently at the first see the possibilities in the way of "boodle," and in securing a charter at a late day, are to a certain extent "left out in the cold," or, in other words, "they are not in it." They recognized the situation at a time when but little sun or room was left for curing their hay, and as a consequence, when spring arrives

their stock is small in numbers, as well as in a good condition for the study of anatomy by the zealous student of the same. Neither does it necessarily follow that because the student list of a college is small, it is doing dishonest work, for such an institution may be doing a more honest work than its neighbor who is making more noise than necessary, and at the same time endeavoring to work an injury to its rival, whenever possible, either through misrepresentation, or otherwise. The words "stop thief" are easily spoken, and are excellent for drawing attention from one's self. There is a parallel in case of both the quack college and the "graduated" quack, who is apt to boast of the greater number of amalgam fillings which he "turns off" than does his conscientious competitor.

At one time there were prospects of an improvement in the situation, and that through the dental departments of the State Universities, but politics had its sway the same as in other places, and no improvement was seen, notwithstanding that the State paid all the bills. At the same time, some of the stock companies, evidently fearing its effect from a financial standpoint, hastened to ally their schools with local universities when possible, yet retaining their own management as well as the swa—emoluments. Notwithstanding the fact that the State laws regulating the practice of dentistry have been productive of great good in preventing many incompetent men from engaging in practice, yet they have proven veritable bonanzas for the colleges, inasmuch as a "graduate" has only to pay his fee that he may commence "pulling" teeth. The unplucked has only to present his piece of white leather in addition and all is well.

There is a rumor that certain men connected with a college in the City of Chicago, made an honest and at the same time strenuous effort to have the law so amended that ALL who intended to commence practice in Illinois, should be obliged to submit to an examination by the State Board of Dental Examiners before commencing practice, and there is also a well defined rumor that it suffered defeat through the well directed efforts of a rival college which had a "pull." At that time, a Professor in a college located at Chicago, was heard to propound a conundrum, which was in effect to ask "of what use was a diploma if it would not admit the holder to practice in any State in the Union? The point was so well taken, and the thought deemed necessary for a solution of the problem so great, that none present were willing to lower the

standard of the gray matter of their brains by trying to guess it. It is possible that some person may yet become insane with his attempts to a solution. However, a manifestly necessary amendment (necessary on account of the existing conditions), was "knocked out." The event convinces the writer that the school is conducted purely for "all there is in it," not necessarily for the education of dentists. At the present time, the important question with the colleges is "how can we make the most hay while the sun shines," or, in other words, "how can we manage to rake in the greatest amount of the coin of the realm," and before the three years rule is in force, for after that time, there is a strong probability that things will be evened up to a greater or less extent. The "Danger Signal" hoisted by C. N. J. was well timed, but is there a thinking dentist in the Northwest who, for a minute rests under the conviction that one additional tailfeather will be honestly plucked on account of it? Methinks no.

GEO. H. McCAUSEY.

LETTER FROM NEW YORK.

NEW YORK CITY, Feb. 18, 1891.

To the Editor of the Dental Review:

DEAR SIR—February is a short month this year, yet some good things have occurred, as you will see, and some things have occurred which we think would have been better to not have occurred. Hindsight sometimes proves more than foresight. There is no little brewing over these things, so we will wait and see how much beer will come of it. "The best way is as good as any."

Clinics of more than ordinary interest took place this month, calling out the largest attendance this season, numbering one hundred and seventy-eight.

Dr. Timme, of New York, had an encore, being called to repeat his operation in glass fillings. It looks like being a taking thing. We heard it hinted that a dentist of ingenuity might start out giving instructions for a small fee, by going directly to the offices, which is not a bad idea, and we predict it would be a welcome mission, when the uniqueness of the work is seen.

Dr. Blackstone, of Manchester, N. H., was not able to be on hand for his demonstration of a rapid compound filling of soft and cohesive gold, but will exhibit his skill possibly in March.

The repairing of bridge-work by a simple method of Dr. E. B. White, of Philadelphia, was an attraction to many.

Inlaying porcelain in an artistic manner, by Dr. Burton C. Russell, of Keene, N. H., was much admired.

Dr. Ashly Faught's ingenious device for packing gutta-percha without the danger of overheating, proved all that is claimed. Many will desire it.

Dr. Ivory, of Philadelphia, demonstrated his cervix and dam clamps, which only need to be seen to be appreciated.

Dr. Haskell (though absent), exhibited the Chase combination plate of gold and vulcanite ; the latter to form the attachment for the teeth.

Dr. Starr, of Philadelphia, was represented by crown and bridge-work, with mica partitions.

We also saw a very effective mechanical device for obtunding purposes, than which nothing could be more complete. It consists of a super-heated steam spray, which is thrown upon the parts by atmospheric pressure, controlled by valves operated by the fingers. It first passes through tubing connected with a chamber holding a pack of cotton, behind which is a reservoir filled with a mixture of equal parts of carbolic and aromatic sulphuric acids ; all this is connected with platinum tubing, with an opening not exceeding the diameter of a fine needle ; this tube is hung upon the barrel of a Bunsen burner obliquely by a hook, so that the flame strikes it at an angle, and it is heated to a white heat. The apparatus sits on the operating table ready for using the flame, if so required, for annealing purposes. It can be applied in the most simple manner, giving action immediately with the sensation controlled. One is charmed with its efficiency—no one more so than the patient. Dr. C. M. Richmond is the inventor. Seeing is believing.

All these exhibits tell us that the mental action of man is marvellous, and it encourages us to hope that painless operations may yet be possible. "Prove all things ; hold fast that which is good."

Emulation in such things is far more worthy than selfish ambitions which do not generate a helpful atmosphere.

The best thing in the month we think is due to Dr. Barrett, of Buffalo. The exhibition of probably the most perfect and unique collection in the world was given in the afternoon previous to the evening meeting of the First District Society. It was a collection of skulls showing the dentitions of different animals, repre-

senting all the orders and classes of the mammalia, with many of the fishes, birds and reptiles. A part of this collection is from the doctor's private accumulation; the remainder is from Prof. Henry Ward, of Rochester, N. Y. There were several hundreds of specimens rarely seen, and should arouse the admiration of dentists. The lesions of the teeth and associate parts displayed were of great interest. How human these things seem. We were surprised when told that they could be purchased for the small sum of \$1,500. We also heard it talked that if the New York College Alumni would purchase it, the proprietors of the institution would house it in their new building just purchased for \$106,000. We are told that the alumni think the college is so little a professional school (altogether personal) that they have no interest in it. What does this indicate?

This school has a history, and we could tell many things that led it astray before it was in the hands of the present corporation. Why could not New York City have an institution that would dignify the profession in the eyes of public opinion? Has dentistry no duty in this line?

Dr. Barrett's earnest suggestion during his lecture in the evening on "Comparative Anatomy," points to this. He said, "That the study of such things as were indicated in the valuable collection on exhibition should by all means be pursued by dentists." Dr. Barrett's address was of unusual interest. The doctor has certainly no peer among dentists in the study of odontology. He never made so good an impression. It was a treat and full of instructive suggestions which will be full of wisdom to heed. How these things emphasize our growth. Dr. Barrett encouraged the idea of New York dentists securing this collection, and offered \$100 toward its purchase, saying he preferred it should be in New York if it could not be in Buffalo.

Dr. Walker says the Columbian Congress is marching on progressively so far as the committee matters are concerned. No grass can grow under the feet of such an energetic chairman.

Many will regret that Dr. Dwinelle has been quite ill, but his recuperative power is wonderful and all bodily ills quail before his will. Some are born for good fortunes. Dr. George Winkler is to wed the accomplished daughter of the Spanish Consul, who is not particularly handsome but (very sweet) she may make the genial

doctor walk Spanish. The doctor has been in New York but a short time but has a fine practice.

We are often asked: "How do men get a practice in New York?" Too big a question. One can find every degree of ability from low grade to the highest, and the same sliding scale of success, both of professional and financial. Men do succeed outside of New York.

Dr. Wilson, of Paris, Texas, has traversed the world mining in gold and diamonds, and now a dentist full of horse sense and a plethoric purse and urged on by a fine constitution; and what he does not know when he leaves for Texas will not be Parmley Brown's fault, and we have met another successful dentist of first-class ability whose ambition urges him to put a patient's mouth in tip-top order and get good fees. We have seen some of his work in this line during the last month, and are sorry to say that operators of this stamp are too few.

Dr. McDermidh is an associate of Dr. Lovejoy, of Montreal, Canada; he is full of promise with the qualities of the gentleman, besides being the ladies' favorite. Of course he must be good-looking.

The members at the annual meeting of the Jersey Dental Society did not discuss, but they did with their visitors, justice to an excellent menu. Sixty-two earnest men sitting about a reasonable repast and enjoying every morsel with a smile, and at rational intervals sauter(n)eing here and there with a fraternal good word and look, is not necessarily an unprofitable deviation from a continued down-in-the-mouth occupation. The Jerseymen promised lots of fun and they had it. Nothing mean about Jersey dentists. Everything went first-class. What an aid to digestion is a laugh which one cannot hold back, and has no desire to. Any one that goes back on fun, has a slow liver and is morbid. Whew!—get behind me Satan—the atmosphere of such a man is poison. Our motto is, "Live by hope." I say this because I meet many who are looking too much into the clouds and are calling them dark.

Well, if we had not seen the growth of Jersey progress, President Eaton's healthy retiring address would have made us cognizant of it. It was a straight-cut statement of facts. They did begin in a small way, back in 1868, and now they have got there and why not feel proud and pat themselves on the back? We have said all that he said, and we are grateful that they believe it and

say so. This proves us a faithful and truthful correspondent, "don't you know?"

The presence of Drs. Carr, Francis, Kingsley and McAvaney, of New York; and Campbell, Walker and Pitts, of Brooklyn, did not quail before anything easy of access. They took in all they could to prove their appreciation of things. We think this the best thing in the month for them. It seems to suit their taste. Why not?

Dr. Holbrook caught the winning card for President of the C. D. J. A. He can look as good-natured as any of them excepting Stockton—he "takes the cake"—he came out of a sick-bed and eclipsed all former oratorical flashes. One thing that ought to be emphasized, according to the talk, all animosities are gone. Good again for Jersey. A noble example worthy of emulation all along the line. Not all of one mind necessarily, but of one spirit. Good things do come out of Nazareth. Why should the spirits of mortals be proud? Well, the Odontological Society feels that way, and well they may, for they have set a ball rolling that can easily be kept on the move. They have secured the valuable collection referred to in the early part of this letter.

Dr. Carr tells us that "it is purchased in the interest of science," and that it is to remain in the building of the Academy of Medicine, for, says he, "We belong here and must identify ourselves with this place." What this means in reference to the project for establishing a headquarters for dentists, time will reveal. We are glad that ambition has stimulated the securing of this treasure.

It was said at the Jersey meeting, in President Eaton's address, that a committee was in joint action with others who were considering the proposition made by Boedecker for the establishing of a dental headquarters.

Dr. Wight, of Brooklyn (a medical doctor), entertained the Odontological Society with a paper full of profitable suggestions; subject, "Work," presenting the dignity of work, the love of it and its purposes for the good of others, apart from the fee that may or may not be received, for, said he, "we make out our bills, send them and (sometimes) collect them." There was a good attendance of earnest listeners, which always proves that the speaker is saying something which is worth the hearing.

Dr. Atkinson, in answer to a request that he say something in

response to the paper, said that it was of value in connection with work, and the thought carried a compensation above all fees. In the application of the necessary knowledge of the case in hand, an enthusiasm is kindled which gives absolute repose by banishing the thought of reward.

Dr. Jarvie emphasized the value of the paper and felt that he could say "Amen" to all its hints. Dr. Davenport echoed the same spirit and gave expression to his fellow-feeling in the matter. He expressed our own views when he said that the fee should be regulated by the success gained, meaning, as we look at it, that skill entitles one to a fee above the ordinary. We do not think dentists have yet shown themselves a very liberal profession in this respect. We could relate some very painful facts in this direction that have occurred in New York, where bills remain unpaid because "brother dentists" have advised the parties not to pay them, and *they* have completed the case and charged three times their usual fees because they had an unusual opportunity. Is it honest? This reminds us that no little gossip is rife just now over the question going the rounds, "Who has the largest practice?" It is said \$23,000 was collected by one party in '90. Drs. Northrop, Carr, Streeter and Abbott are the leaders in large practices. So said.

It is said that Dr. Dwinelle has had the largest clientele and most uniform fees of any in the past twenty-five years. We heard Dr. Main tell Dr. Brockett at the banquet, that he had averaged \$20,000 for twenty years, out of which he has secured the nucleus of his fortune. Dr. Thomas W. Evans, of Paris, is without a doubt ahead of all dentists in finances. He is rated at \$12,000,000.

Dr. S. G. Perry said, at the last meeting of the Odontological Society, he was moderate in his charges; he did not count himself a very good dentist. Yet he is reported as having a large practice with good financial results. He is a very hard worker and painstaking.

If the question was raised, "Who are the practitioners of the most value to the community?" it might save a good deal of discussion.

Dr. Morgan Howe is a conservative thinker; he said, in connection with the paper at the Odontological Society, he feared that it was too much the thought with the coming dentists, that more was thought of the finance than of the real value of their services to the public they were serving. We are inclined to think so, too.

The commerce of practice has a terrific grip on far too many, and yet, we believe also with Dr. Perry, that there is much of promise indicated for the future. We say that never was there a time when so much real talent was coming to the front, both of fingercraft and brain work. We are full of faith that the coming meeting of '93 will verify this. We say to the young practitioner, "Here is an opportunity which only centuries offer. Trot out your very best ability, your *special* ability, is the demand of the times." Is this a fact, that we cannot secure a *social* position as *dentists*? We have been told that an "M. D." puts one way up. We would like to know or see one who is exalted by this degree in a social position (we mean as the world views it). The old question comes up, "Can any good thing come out of Nazareth?" All the best things come that way.

We predict that when men cease to sell gold and amalgam fillings at so much a piece, and "bile rubber," the scale of position will slide up; if not to its ultimate, at least far higher than it is now. In the meantime let us be diligent and patient workers, for things are bettering as sure as there is a God. The leaven will leaven the whole lump, and dentists are in the ferment. Who can doubt it?

Bro. Hungerford seems to be in a ferment over the "unceasing laudation of certain New York men." Now if only he was in New York and could do some nice thing and get a little notoriety, we would be so much pleased to laud him, but as our correspondence is occupied with the one "great city," we cannot find room for all praise of the dentists of the "great West." The doctor is a hustler among the *Incidents* and is making repute for the journal. We think that when men are doing so much which is commendable, it sounds better to them than to dead ears. Flowers on one's mantle-piece while living are better appreciated than are flowers on one's coffin. So long as Bro. Harlan does not complain of our laudation, we will venture to say just what we think of all good fellows, for it will be noticed that we are generous not only to New York men, but not a few around its borders. If we are cut off in our youthful endeavor, we shall try to be a good boy first, and "an angel bye-and-bye."

Some of the clippings of Dr. Hungerford's department sound quite familiar to us. Dr. Hungerford, "he's all right."

Brooklyn society all broke up this month by getting mixed in

George's birthday coming on the same day as the meeting. So many had been celebrating they failed to put in an appearance in the evening, and those who did get in at 6:30 for the \$1 supper, supposed it was right when they walked into the dining room and saw a fine lay-out; it looked like "the best thing in the month," but it proved a banquet in honor of "Johnnie Rooney." We heard here and there a few italics, and about a baker's dozen sat down to a frugal repast, after which on account of there being so many absent the essayist was dismissed until the March meeting.

In spite of the mixed state of affairs, Jersey had a delegation chaperoned by Dr. Palmer, who (nose) more than ordinary; we think "Jersey lightning" is going to be a factor in dental matters one of these days. It may not be known in the west that Jersey was not in the United States "befo' de wah." They are going to do some rattling in '93, if they have to (levy) on Chicago to get home again. We heard one member say he was going to Chicago in '93 if he had to walk, so this is a hint of what is going on in Jersey.

Expectant prophecies are in the air concerning the rich programme for the State meeting at Albany, N. Y. We are told one that paper to be presented has cost the expenditure of more than three hundred dollars in the preparation. All of the productions of this gentleman are of a choice nature.

This meeting is in anticipation to excell all former ones. Why not the latest the best? This reminds us of a remark made by Dr. S. G. Perry at the last meeting of the O. Soc., that the higher peaks are getting to look less high for the valleys are moving up. This indicates more uniformity of elevation. The leaven of knowledge is doing its more perfect work.

A young man said to us at the last Brooklyn meeting, "We feel, perhaps too much, that the older members do not care to hear our prattle," yet this is not true. It has sometimes occurred that a young member has mistaken a kind criticism for fault-finding. We know for ourselves how we have cringed under such experiences, but it has not shut us off. We often feel now a little good that we do get noticed, for then we know some one has been taking the trouble to read what we have said.

One of the most appreciative recognitions of our writings have been letters received from an obscure one telling us of some way in

which we had helped him; in some instances these letters have been from persons whom we have never met.

If we have, in any sense, been truthful in our writings, we have made a little "beautiful" because "true," as Dr. Newkirk says in his very interesting and instructive article in the February number of the REVIEW, "Can one when he has stood in the vestibule of Truth, ever withhold it afterward?" Can such an one stand still? We query in this wise because we have heard gruntings from some from whom we had hoped better things. "We have given all we propose to give to the profession." (The disgruntled ones have been editors of dental journals.) I wonder what is behind such remarks? Now we think these men are very bright and useful members of our calling and capable of edifying their readers. They will certainly lose more than any one else by "kicking over the traces." This attracts attention if it is kept up too long and raises the question, "Why don't that fellow quietly put back his foot in its proper place?" Then he can do a little pulling.

Horace Greeley used to wear the knot of his necktie under his ear and his pantaloons leg hitched up over his gaiter. Great men can do such things while ordinary mortals look very distasteful in a similar guise. How small some people make themselves look by backing and not going along smoothly.

A right smart fellow who has a good deal to do with societies, tells us if he could by mark of his pencil strike off five men he could make things go on smoothly, but they persist in making themselves think that they are so necessary to the profession. Do we have any necessity for such men? Yes.

This reminds us of a story: A parson in newly taking charge of a church found one kicking member whom no one could handle. The parson looked him over and took his measure, and at the next meeting said: "We need another deacon." Certain members saw the point, so at the following business meeting the refractory member was elected to the honored post, and there was no more trouble from him for his vanity was surfeited. Why can't these five be put on exhibition for some tireless task? where they can pass around the hat or plate and be seen by their companions? Yet nothing is more pitiful than to see one in a position which he has no fitness for.

We had a sweating experience once; the President of the American Dental Association beckoned to us to take his place for a few minutes. My! we felt as though we were in pants sixty inches

around our waist, which really measured but thirty-one inches. No presidential bee has ever buzzed in our bonnet since. We think we would be just as scared to be put suddenly into an editor's chair.

Now while it must be conceded that all cannot be editors or great, yet all can do something which will contribute to the general fund of usefulness and that is what the journals are for.

We wrote our first article for the *Cosmos* in 1858 when we had been in practice some four years. We thought we had a good thing so we ventured to send it to the editor and much to our surprise it appeared in the next number, and we have rattled a good deal since. We have had editors refuse better productions since, we think, but we have always found some willing one who would take them off our hands. We do not think our articles are the best we see, but we will yield to none in our good purpose.

We have written thus, hoping we may brace up some timid fellow who has been holding back an effort, and go into training for '93.

Ex.

REVIEWS AND ABSTRACTS.

DR. THOS. W. EVANS.

There is so much said concerning Dr. Evans, much of it incorrect or romantic, that it will not be out of place to publish the following comparatively correct account of his life by a noted newspaper correspondent:

REMARKABLE CAREER OF AN AMERICAN DENTAL SURGEON.—Dr. Thomas W. Evans achieves fame and fortune in Europe, enjoying the friendship of nearly all the crowned heads.—Honors showered upon him by Napoleon III., Emperor William, Queen Victoria and the Czar.—How he brought out the Empress Eugenie.—Services to America.

WASHINGTON, D. C., Dec. 27th.

A number of paragraphs published in American papers give erroneous details concerning the life of Theodore Evans, an American citizen who recently died in Paris. He was represented as the oldest of a most remarkable Philadelphia family. The Evans family sent out into the business world three boys, but it was the oldest boy who established himself in Washington, where he reached a good business success. The second brother, Theodore Evans, made his fortune both in Europe and this country. But the most successful was the youngest, Dr. Thomas W. Evans, who

has lived for forty years as a prominent figure in Paris. His career reads more like a romance than a real history. He left America when he was not more than twenty years old, and went to Europe with the fixed idea of establishing himself there. He was always an apt scholar in everything relating to mechanics. He was a graduated dental surgeon before he went to Europe. He mastered his profession in the broadest sense by also taking a degree in medicine. He went to Europe at a time when American dentistry was unknown on that side of the water. Dr. Evans said he made up his mind from the first to have as his clients all the royalties of Europe. He has succeeded. To-day there is not a single reigning sovereign, from the Queen of England to the Czar of Russia and Sultan of Turkey, that he has not had in his operating chair. The doctor has also filled a large place in the world of private diplomacy and has gathered together one of the largest fortunes in Paris.

NAPOLÉON III. HIS FIRST NOTABLE CLIENT.

His first notable client was Napoleon III., when Napoleon was merely a claimant. Dr. Evans first became acquainted with the future emperor when he returned to Paris after his exile in London. He obtained the confidence and esteem of Napoleon, and when the latter became president, the confidence was increased. There was no one who was more intimate or who had more influence with the Emperor later on than the quiet, matter-of-fact Dr. Evans. He was in the confidence of the Imperial Government at the time Paris was made over by Baron Haussmann. He had confidence in the splendid future of the city and bought largely of real estate in the direction of the improvements. It was he who helped the Emperor design and carry out the vast improvements around the park of the Bois de Boulogne. The doctor's investments in the neighborhood of this now fashionable park have made him a many times millionaire. Land bought by him in the early days of the régime for 30 francs the square meter, cannot now be obtained for less than 1,000 francs.

The mother of the Countess of Montijo was first a client and then a friend of Dr. Evans. This mother sent her daughter to Paris as a schoolgirl. The young Spanish beauty spent all of her fete days at the house of Dr. Evans. It was Dr. Evans himself who took her to a ball given by Napoleon when President. The young lady had heard of the ball and was very anxious to go. Her mother had no invitation. As she was in moderate circumstances and un-

known in the Paris world of fashion Dr. Evans went to the President himself and asked for an invitation for his fair protégé. It was at this ball that she was formerly presented to the President. This presentation was made by Dr. Evans. The President of the French Republic was then so much struck by this young lady's beauty that he singled her out for the most marked attention. He danced with the young stranger several times. This attention made a marked sensation. The young lady the next day was a noted character. This acquaintance begun at the ball led afterward to the marriage.

DR. EVANS' SERVICES TO HIS NATIVE COUNTRY.

The intimate relations between the Emperor and Dr. Evans enabled the latter to preform a great service to this country. No account of it has ever been published.

During the darkest days of our war, Emperor Napoleon was anxious to recognize the Southern Confederacy. He had fully made up his mind to this, and had entered into correspondence with the English Prime Minister upon the subject to secure the co-operation of his country. Dr. Evans, who is one of the most staunch and patriotic Americans, insisted upon the Emperor making a delay of a few weeks at least. The doctor said:

"I will go to America and see Mr. Lincoln, I will visit Washington and learn the real truth of the situation. I know that the North must win. I believe that I can bring back to you evidence to prove this. You know that I have never deceived you and that you can trust my report,"

The Emperor as a great concession to the demands of his old friend agreed to the delay. Dr. Evans visited Washington, saw Mr. Lincoln, and obtained such assurances that he was satisfied that he could convince the Emperor that the Southern Confederacy should not be recognized. Fortunately the North had such tremendous victories during the doctor's absence from France that the Emperor was willing upon the doctor's return to drop the whole matter. He placed in the doctor's hands at that time the correspondence which he had had with the English Foreign Office. If the famous doctor ever publishes his memoirs, these letters will make a most interesting chapter.

HONORED BY THE GERMAN EMPEROR.

The German imperial family has treated Dr. Evans upon a footing of intimacy for a number of years. The old Emperor was al-

ways very much attached to Dr. Evans. During the Franco-Prussian war Dr. Evans organized an ambulance service. This ambulance service, carried on at his own expense, did incalculable good, and earned for him the gratitude of the French people, although he had been for a long time an object of suspicion after he assisted in the flight of the Empress. The plucky doctor used to ride down from his house to his office even in those days with a rifle sticking out of the window of his coupe. The threats made at the time on account of his plucky conduct in saving the life of the Empress from the mob soon gave way for thanks when the public witnessed the effects of the humane service established by him for the benefit of the wounded. At the close of the war he was a constant peacemaker and mediator between the two countries. After peace was settled the German Emperor sent for him and offered to bestow upon him the Order of the Black Eagle, one of the highest at his command. The doctor hesitated. He thought that such a token would hurt him perhaps in the esteem of his French friends, so he gently declined, giving his reasons for the declination. The Emperor then devised a special order, which was to be for him alone, and gave this to him in a personal sense, and so this could not be refused. France has in turn given him the highest rank it has in the Legion of Honor. He is a Grand Commander in that order.

MORE THAN TWO HUNDRED DECORATIONS.

Indeed, to look at the doctor's collection of orders, for he never wears them except on rare occasions, and then but the highest, it makes such decorations look cheap. He has had all of the orders possible to be conferred on him by Germany, Russia, and all the leading countries of Europe. He has over 200 in a cabinet in his library. One of the first jubilee medals struck off for the Queen of England, was sent to him. One of the first mourning medals struck off following the death of the Emperor Frederick, was sent to the doctor. His house is in Avenue Malakoff, constructed with the richness and solidity and actual magnificence of a palace, is filled from top to bottom with beautiful objects which should grace the future art museums of the National Capitol—evidences of the gratitude and esteem of his royal patients and friends. In one of his cabinets is a magnificently jeweled and ornamented watch. It was given to the doctor by the Duchess of Baden. It was so handsome that he did not venture to wear it, but placed it in his cabinet of silver

treasures. The next time he met the Duchess he happened by chance to pull out his watch and she exclaimed at once because he was not wearing the one she gave him. His reply was that it was too fine to be worn. Thereupon she had a plain watch at once ordered, and that is the watch the doctor now carries.

The doctor was called in when the Crown Prince Frederick was taken to San Remo. The doctor was not summoned as a medical attendant, but as a friend. He remained there during the Prince's stay. I happened to be at San Remo at the time, and it was there I became really well acquainted with the famous doctor. Every day he received dispatches from the Empress Augusta. It was he who sent the private advices constantly of the condition of her son upon the terrible day when it was thought that the Crown Prince would strangle when the operation of tracheotomy was decided upon. There was no one in the little Italian village skillful enough to make the silver tube necessary to be used after the operation was performed. It was here that the skilled hand of the American doctor was called into play.

SAVED THE CROWN PRINCE'S LIFE.

I walked down with him to a little jeweler's office in San Remo and saw him put on his workman's apron and begin with a blow-pipe and hammer upon a five-franc piece. He worked there all night and the next morning a beautifully made silver tube was ready and the life of the Prince was prolonged, where suffocation would probably have set in within the next twenty-four hours. There was no mention made of Dr. Evans in the story of this operation. In the English papers it was Dr. Morell Mackenzie who did everything even to the making of the silver tube, which no one but a very skillful man with a natural turn for mechanics could have made with the simple materials found in a country jeweler's shop.

Dr. Thomas Evans is of medium height and inclined to be stout. He has a large head. His hair is still thick and is worn in a careless curl in mass swept back from his forehead. His forehead is high and full. His eyes are a blue-gray, deep set; his nose is a large Roman. A mustache and long side whiskers set off his round, plump face. He is in the neighborhood of 60 years of age. He has no children. His wife is a tall, white-haired, aristocratic looking lady, who presides with gracious dignity in the great house on Avenue Malakoff. The house is the center of the best section of the American colony. American visitors of standing always receive

warm welcomes from the doctor and his wife. Although the doctor has been away from home for nearly forty years, he is an always enthusiastic American. T. C. CRAWFORD, *Chicago Tribune*.

DENTISTS IN GERMANY.*

According to the "Dental Kalendar" for 1891, published by Dr. Erich Richter, of Berlin, on the 1st of December, 1890, there were engaged in the practice of dentistry in Germany 731 persons, by German authority. Of these, 446 are in Prussia One-sixth of the entire number, namely, 120, are located in the city of Berlin.

This is an increase in Germany of 64 over the previous year, and 30 of this number have located in Berlin. In 1880, Berlin had 55 dentists. In addition to the 731 mentioned above, there are in practice in Germany 140 American graduates, 49 graduates of other foreign countries and 2,114 mechanical dentists; a total of 3,034.

STATISTICS REGARDING THE NUMBER OF DENTISTS ADMITTED TO PRACTICE IN GERMANY, AND WHO WERE IN ACTIVE PRACTICE DECEMBER 1, 1890.

Admitted to prac- tice in	Resi- dence in	Of these in	Remain- der of	Total in	Admitted to prac- tice in	Resi- dence in	Of these in	Remain- der of	Total in
Prussia.	Prussia.	Berlin.	Germany	Germany	Prussia.	Prussia.	Berlin.	Germany	Germany
1890	19	8	12	31	1863	9	5	4	13
1889	47	13	15	62	1862	7	5	5	12
1888	41	11	16	57	1861	7	3	5	12
1887	47	14	17	64	1860	5	—	4	9
1886	34	7	11	45	1859	2	1	6	8
1885	16	5	11	27	1858	3	1	2	5
1884	14	7	11	25	1857	4	—	2	6
1883	18	3	8	26	1856	3	2	4	7
1882	10	2	5	15	1855	1	—	4	5
1881	16	5	8	24	1854	1	—	1	2
1880	5	—	9	14	1853	2	—	3	5
1879	6	3	—	6	1852	3	1	—	3
1878	6	1	3	9	1851	1	—	2	3
1877	4	1	3	7	1850	1	—	1	2
1876	4	—	2	6	1849	2	—	—	2
1875	6	4	2	8	1848	—	—	1	1
1874	5	2	—	5	1847	—	—	1	1
1873	4	1	6	10	1846	1	—	1	2
1872	3	—	5	8	1845	1	—	—	1
1871	16	5	9	25	1844	1	—	1	2
1870	9	1	6	15	1843	1	1	1	2
1869	11	1	14	25	1842	—	—	—	—
1868	13	—	7	20	Prior to 1842	1	—	3	4
1867	9	2	13	22	Unknown	6	—	15	21
1866	6	1	10	16	Total	447	120	285	732
1865	11	3	12	23					
1864	5	1	4	9					

* Translated from THE DENTAL REVIEW from the "Journal für Zahnheilkunde."

CITIES OF THE GERMAN EMPIRE HAVING A POPULATION OF MORE THAN TEN THOUSAND IN WHICH ON DECEMBER 1, 1890, NO DENTISTS WERE LOCATED.

No.	City.	Population.	No.	City	Population.
1	Braunsberg	10,700	52	Oberhausen	20,300
2	Gumbinnen	10,400	53	Odenkirchen	10,800
3	Dirschau	11,100	54	Ronsdorf	10,500
4	Kulm	10,000	55	Styrum	18,900
5	Köpenick	11,800	56	Velbert	11,500
6	Neuruppin	13,600	57	Wald	10,900
7	Spandau	32,000	58	Mülheim a. Rhein	24,900
8	Wittenberge	10,900	59	Bensberg	10,200
9	Fürstenwalde	11,800	60	Deutz	17,700
10	Küstrin	15,100	61	Kalk	11,400
11	Sommerfeld	11,300	62	Dudweiler	11,500
12	Grabow a. O.	14,500	63	Neunkirchen	17,600
13	Kolberg	16,500	64	Sulzbach	11,000
14	Krotoschin	10,000	65	Burtscheid	12,000
15	Rawitsch	12,000	66	Eschweiler	16,800
16	Schneidemühl	12,400	67	Stollberg	11,800
17	Brieg	18,800	68	Bockenheim	17,400
18	Oels	10,200	69	Straubing	13,200
19	Striegau	11,700	70	Frankenthal	10,900
20	Jauer	11,100	71	St. Ingbert	10,300
21	Sagan	12,400	72	Ludwigshafen a. Rh.	21,000
22	Kattowitz	14,200	73	Neustadt a. d. H.	12,200
23	Leobschütz	12,200	74	Pirmasenz	14,900
24	Neustadt O.-Schl.	16,000	75	Zweibrücken	10,600
25	Zabrze	15,600	76	Amberg	15,800
26	Schönebeck	13,300	77	Grossenhain	11,500
27	Stassfurt	16,400	78	Pirna	13,300
28	Sangerhausen	10,100	79	Döbeln	11,900
29	Torgau	10,900	80	Wurzen	14,600
30	Weissenfels	21,700	81	Frankenberg	10,800
31	Wittenberg	13,800	82	Krimmitschau	19,900
32	Zeitz	19,700	83	Limbach	12,100
33	Langensalza	10,900	84	Meerane	22,200
34	Suhl	10,600	85	Reichenbach i. V.	18,300
35	Harburg	34,600	86	Werdau	14,661
36	Geestemünde	15,400	87	Freiberg	29,200
37	Lehe	11,000	88	Mittweida	11,200
38	Emden	14,000	89	Esslingen	20,800
39	Wilhelmshaven	13,900	90	Reutlingen	18,800
40	Peine	10,100	91	Gmünd	15,300
41	Recklinghausen	11,000	92	Göppingen	12,100
42	Hörde	14,500	93	Tuttlingen	10,000
43	Lippstadt	10,500	94	Rastatt	11,700
44	Lüdenscheid	15,000	95	Apolda	19,300
45	Schwelm	13,000	96	Oberstein	12,900
46	Iserlohn	20,000	97	Wolfenbüttel	13,400
47	Wattenscheid	11,600	98	Sonneberg	10,200
48	Witten a. d. Ruhr	23,800	99	Gebweiler	12,300
49	Neuwied	10,100	100	Kolmar	26,500
50	Höhscheid	11,600	101	Markirch	11,400
51	Neuss	21,900			

PRACTICAL NOTES.

SURGICAL CLINIC. PROF. T. W. BROPHY, CHICAGO COLLEGE OF DENTAL SURGERY.—SPINDLE-CELLED SARCOMA.

REPORTED BY LOIE S. WILSON, M. D., RUSH.

GENTLEMEN: The patient is an American woman, 48 years of age. Upon examination, we find a malignant growth which seems to be of a sarcomatous nature, as most of these malignant growths of the upper jaw are of the character of sarcomata. The history of the case is as follows: About twenty years ago she contracted catarrh of a very severe nature, which lasted ten years. Then a new trouble commenced which caused a dental irritation. Eight years ago she had several teeth extracted. About two years ago she received a very hard blow over the cheek with a stick of wood. While any one of these troubles might have been the cause of her malady, yet it seems that the last mentioned is the most probable, as these growths are very often due to traumatism, and especially when her trouble commenced soon after being struck. Notwithstanding this, we are inclined to believe that her trouble has come from protracted dental irritation. There is nothing whatever in her family history that would suggest any other cause for her present condition.

Last July she noticed a swelling below her eye, extending over the prominent part of the malar bone. It began in the antrum and filled it and the nasal passage. It grew and spread for one month and would then break, discharge and heal at intervals of about two weeks; and by September the growth was as large as a hen's egg. At this time she was operated upon by her family physician, who removed the growth. The parts seemed to heal over nicely, but apparently was only a slumbering volcano, for in three or four weeks the trouble again commenced. She noticed a lump on the gum over the second bicuspid. The 1st and 2d bicuspids, and 3d molar was then removed, as there still seemed to be some dental irritation. The 1st and 2d molars had been extracted eight years previously for the same cause. In a week's time the lump had enlarged and raised the lip; this being about the last week of November. The growth continued very rapidly until now it has involved the whole right side of the face, forcing the eye upward and outward, and being very prominent over the malar bone. The diagnostic points especially to be relied upon are causation, rapid-

ity of growth, incorporation of the adjacent parts and secondary growths elsewhere. Owing to the number of cavities about the face, the upper jaw is accessible for diagnostic points.

However, as I said at first, this case is without doubt one of sarcoma, so we will proceed to operate. The line of incision will be through the middle of the upper lip, around the ala of the nose, then upward almost to the inner canthus, and a cross cut below the eye, thus making the incision so that the cicatrix, resulting from the healing process, will be less conspicuous.

The large flap will be laid back from the jaw and the attachments of the jaw to its fellow of the opposite side, in the middle line and to the frontal and malar bones, are then to be divided by a saw or cutting forceps. Upon doing this, I find that the infra-orbital plate, the inferior turbinated bone, the ethmoid, partially, the right inferior maxilla except the palate plate, are all involved, partially disintegrated and to be removed. The tumor extends back to the sphenopalatine fissure, forward to the eye and bridge of the nose and to quite an eminence over the malar bone.

There is very little hemorrhage here, due to the fact that the arteries have degenerated with the tissue. Now, having removed the tumor, we will stitch up the incisions and pack the cavity with iodoform gauze until to-morrow, when it will be removed, and then the dressing is to be changed about every third day until the space is nearly filled with tissue, when the packing will be stopped.

It is now a month since the patient was operated upon and her recovery has been as rapid as could be expected. Granulation tissue has filled up the cavity and union taken place nicely. The infra-orbital plate and surrounding parts being removed, there is some little deformity, but not as much as would be expected, where, if the plate could have been left, the deformity would hardly have been noticeable.

The entire palate was exempt from disease and therefore not removed, hence her speech and sense of taste are as good as before. The customary procedure is to remove the palate at these operations, but its loss we regard as an irreparable one, and always a great impediment to speech. The senses of sight and smell in this case also seem unimpaired. While this patient is doing nicely at present as we hope she will continue to do, yet it cannot be said but what from the nature of the tumor and being malignant that it may return, in which case another operation may be required.

MEMORANDA.

Dr. J. Arkövy read a paper in London, Feb. 2, 1891. Cosmopolitan.

The Eastern Illinois Dental Society will meet in Paxton, March 17 and 18.

So far, I have heard but one voice—the dentists are coming to Chicago in 1893.

It is expected that the bill before the French Chamber of Deputies will soon become a law.

The *Pacific Dental Journal*, Tacoma, Washington, is out. Dr. W. E. Burkert is the editor. Success.

The "ITEMS OF INTEREST" have a new and much more becoming dress than formerly. The editor still fails to give proper credit to some of the journals for his selections.

The editor of the *Southern Dental Journal* has removed to Macon, Georgia, to which place all editorial matter should be addressed. Drs. J. B. Hodykin and R. Y. Hurly are now his associate editors.

The Iowa State Dental Society will hold its next annual meeting in Sioux City, the 5th to the 8th of next May. An effort is being made to make it one of the best meetings in its history; all are invited to come and help us.

C. J. PETERSON, Pres., GEO. W. MILLER, Sec.

Dr. Sullivan Whitney, the first American physician who manufactured homœopathic medicines, has just died at his home in Newtonville, Massachusetts, at the age of eighty-three. He was graduated from Harvard Medical School nearly fifty years ago.

That indefatigable scientist, Dr. Patrick, of Belleville, Ill., who was in town recently, is making arrangements for the publication of a work on Dental Anatomy. It is to be a comprehensive work, adapted more particularly for the practitioner, and modeled after Gray.

Drs. L. P. Haskell, of Chicago, and W. G. A. Bonwill, of Philadelphia, were entertained last month at Wilmington, Del., by Dr. J. F. Frantz, the president of the Wilmington Dental Manufacturing Co. They spent some time in looking over the establishment of the company.

Dr. W. Xavier Sudduth, of Minneapolis, read a paper before the Dental Club of Chicago, February 24, 1891. Dr. Sudduth will deliver a course of lectures to the students of the Dental Department of the University of California, during next July and August.

At Washington the other day the General Executive Committee of the "World's etc.," filled several committees and got down to real hard work. The admission fee to the meeting will be ten dollars, and all reputable members of the profession are to be invited to participate in the proceedings.

Recently, while idly looking through the stock of a "dentist," *i. e.*, druggist, I saw a package labeled "Enamel for stopping the teeth." Curiosity overcame me and I surreptitiously opened the package and found—a stick of white gutta-percha, with directions for use—every man his own dentist. America must take a back seat.

"The meanest dentist I know of is he who hath a gold-catcher in his spittoon," quoth an indignant patient. "Why?" asked Mr. Jones. "Because he has been polishing my thirty-year-old gold fillings semi-annually for the last three years; the fillings are all gone now, "concaved," as he says; the gold-catcher was undoubtedly in good order."

I counted no less than fifteen advertisements of "American" dental institutes and companies in a single issue of a London daily recently. Most of these shops are humbugs of the worst description, being generally owned by an advertising British dentist with a small b, who employs broken-down Americans or the recent baby graduate from the "States." The employer and employé are and should be shunned by everything decent.

ERRORS. Several very annoying errors crept into the February number of the DENTAL REVIEW, which may be explained by saying that the editor was absent from the city, and two of his associates, Drs. Ottofy and Davis, were confined to their homes by the death of Dr. Ottofy's infant daughter, and the dangerous illness of Dr. Davis' mother, leaving but one, Dr. Johnson, on the scene and he had not the opportunity of the final reading, "hence these tears."

The Chicago Polyclinic offers physicians facilities for study in pathological microscopy, which some of their dental brethren will probably take advantage of. The course is entirely practical, including the examination of the various tumors, abnormal tissues, blood, saliva, urine, etc., demonstrated by the most reliable and useful methods of staining and chemical reaction. The instruction is given by Prof. Gustav Fütterer, late Chief Assistant in Prof. Rindfleisch's Pathological Institute, in Würzburg.

At the annual meeting of the Central Dental Association of Northern New Jersey, held Feb 16, 1891, the following officers were elected for the ensuing year: President, C. W. F. Holbrook, D. D. S., Newark; Vice-President, H. Iredell, D. D. S., New Brunswick; Secretary, S. S. Hawley, D. D. S., Cor. Warren and 13th Sts., Newark; Treasurer, Chas. A. Meeker, D. D. S., 29 Fulton St., Newark; Executive Committee, George E. Adams, D. D. S., Chairman, South Orange; R. M. Sanger, D. D. S., East Orange; S. C. G. Watkins, D. D. S., Montclair; W. L. Fish, D. D. S., Newark; B. F. Luckey, D. D. S., Paterson.

"Quite a variety of apparently different mixtures can be obtained from the same brand of any copper amalgam. For instance, if it be heated so that the globules of mercury appear in very minute form, and is then simply crushed in the mortar, the product will have the appearance of a fine sandy mixture, in which state it will set very quickly and is difficult to apply to the cavity. If, however, this mixture without further heating, be triturated thoroughly, it will come out soft and spongy, with a bright mercurial surface. If heated until the mercury appears in larger globules and the mixture is well worked in the mortar, the product will be a bright, spongy mass.

Again, if the amalgam be heated until the mercury entirely disappears or, is apparently cooked out of it, the product will be a sandy-like coppery mass, which only partially unites under the pestle, but will nevertheless make a good filling.

The popular method in heating is to let the mercury appear in good sized globules, and then triturate pretty thoroughly in the mortar. The time of setting

is governed by the quantity of mercury left in the mass. The less mercury, the quicker the setting."

SOLDER FOR ALUMINUM. THE PROBLEM OF UNITING TWO PIECES OF THE METAL SOLVED BY WATERBURY MEN.—ANSONIA, Conn., Feb. 11.—Ever since aluminum has been a merchantable commodity and the manufacturers have begun to use it the work has been obstructed by the difficulty in soldering the pieces of the metal together. Experts have tried every known flux, but nothing would answer the purpose. Last week two Waterbury mechanics, Frank Page and Harry Anderson, struck the right process, after two years spent in experimenting, and their attorney has gone to Washington to secure a patent. When they saw they had succeeded they gave two pieces of the soldered metal a most severe test before they would announce the secret. They put upon the metal a strain of 1,100 pounds, and then it remained firm and sound. Samples of the welded metal were sent out to several of the larger manufacturers, and since then their mail has been flooded with letters asking the two young men to name a price for their discovery, some of the offers being almost fabulous in amount. The difficulty in welding aluminum heretofore has been that the flux would run off the metal like water. The secret of the recent discovery lies in the combination of various chemicals which adhere and form a perfect union between the two pieces. Heretofore aluminum has had to be riveted.

WANTED—A young man to learn dentistry at the branch office of the Dental Association. His moral reputation must be A No. 1 with a good recommend from his mother, and promise faithfully to serve out his time like a man and not to go on a strike for \$17 per week until he operated in the laboratory at least six months. Must be willing to get out of bed in time for breakfast—before nine o'clock. Must keep out of the kitchen between meal times and not induce the cook to hide away custard pie to eat after the family have retired for the night. Past experience makes it necessary that we should be particular in this matter. He must not use the plaster of Paris for the purpose of getting a cast of his own profile when alone, as the last student came very near causing a funeral at our office, but was discovered in time to bore a hole through the plaster to his mouth, when he soon revived enough to have the cast cut loose from his eyebrows, moustache, ears, nose, &c. We had no idea any one but a born idiot would have spread out four quarts of plaster on a sheet of brown paper and then bury his own face in the mixture. It was a close call. Must not try it. Should he think himself a dentist and wish to start a dental association of his own before his apprenticeship is ended, he must not go out on the French plan in the early morning, bag and baggage, as we shall require at least ten minutes' notice, which will give us time to see what the baggage consists of, as we have a large stock of goods lying around loose. And he is not expected to start an opposition office in the same block by stealing the names of patients registered on our books in order to secure their patronage. Should he disregard our feelings in this matter we would advise him not to take as a partner a man just discharged from our employ as an N. G., until he has money enough to pay his first week's board. Should he advertise, don't say you will not put in sets of teeth at as low price as the Albany Dental Association does. People know you cannot and live. And we would like to secure the services of a first-class operator—one who can be recommended by

some one besides himself and who does not use old rye to sweeten his breath when operating for ladies. Must not expect a larger salary than the total receipts of the office. Should we have to discharge him as no good, he must not mislead a weak-minded student on and induce him to leave us against his will. And lastly he must not carry off any gold foil, operating tools or other property belonging to the Association. Apply to Dental Association.

ANOTHER PIONEER GONE.

Dr. Sol. Hoine, of Missouri, died during February at Bourbon, aged 69 years.

WHAT'S IN A NAME.

One of the journals in Great Britain in republishing the circular anent the World's Congress in Chicago, heads it, "Proposed Meeting in Columbia."

THIS IS THE LATEST IN CHICAGO!

Misses ——— Manicure Parlors. Teeth cleaned and polished. Hours, 9 a. m. to 6 p. m. What are we coming to?

NONAGENARIAN TOOTH.

A dentist of Eaton, Mo., pulled a tooth the other day for a man 90 years old, who had never before had a pair of forceps in his mouth.

A GOLDEN SOUVENIR.

SHE—When you do the gold filling won't you please use this gold monogram bangle? It'll be such a pleasant reminder of *somebody*.

ILLINOIS STATE DENTAL SOCIETY.

The Twenty-seventh Annual Meeting will be held at Bloomington, beginning Tuesday, May 12, 1891, and continuing four days.

GARRETT NEWKIRK, Secretary.

CATCHING'S COMPENDIUM OF DENTISTRY FOR 1890.

In last month's issue, in reviewing Dr. Catching's work, the price was stated as \$2, *when it should have been \$2.50*, at which price the Compendium is cheap. We regret the mistake.

ANOTHER DENTAL COLLEGE.

The "Cincinnati College of Medicine and Surgery" will add a dental department to that institution, beginning with the next session, about the middle of September. Two now in Cincinnati.

TRUE TO HIS PRINCIPLES.

MR. BISON WAIBAK—What! Yew want to fill the *cavities* in my mouth with *gold*? Yew've got to remember that I'm one of ther few survivin' greenbackers and yew'll hev to fill my mouth with paper money or not at all.

"HERE LIES SILAS LUKER,
HIS HEART WAS FULL OF FAITH,
HIS MOUTH WAS FULL OF GOLD."

No wonder Pinkerton men are frequently employed to watch graves.

BOARD OF DENTAL EXAMINERS OF THE STATE OF MINNESOTA.

A regular meeting of the Board of Dental Examiners of the State of Minnesota will be held Tuesday, April 7, 1891, at the Medical Dept. of the State University, here in Minneapolis, for the examination of candidates for licenses.

H. A. KNIGHT, Secretary.

608½ Nicollet Ave., Minneapolis, Minn.

WHERE THE DEPOSIT WAS DEPOSITED.

LAWYER FOR THE CREDITORS TO SANKTIMONYUS SKINNE, ESQ. (President of the "busted" goody-goody bank)—Now, sir, tell the court what became of that \$18,690 in gold that was deposited with you on the day of your failure.

S. S. ESQ.—Well, really, sir; ahem! to tell the truth, which is my invariable custom, my dentist put it all in my mouth, and I must have swallowed some.

THE MOUTH IN IMBECILE CHILDREN.

The author believes that high palates occur mostly in two classes of cases—the Mongolian and the microcephalic. The former type embraces about 5 per cent of all imbeciles, and is very distinctive. The lower incisors are irregular and rarely meet the upper in a line. The wedge-shaped mouth is common, the teeth being arranged in two converging lines, which meet at an angle. This is usually accompanied by a high and vaulted palate:—*Journal of Mental Science*.

ANOTHER ALUMINIUM PROCESS.—A SOUTH CAROLINA MAN CAN PRODUCE IT FOR \$2.50 PER TON.

P. A. Emaneul, a member of the Aiken bar of this state, has discovered a process by which aluminium can be freed from kaolin at an inconsiderable cost. The material which he uses is the kaolin of Aiken county. On making the discovery Mr. Emaneul went to Washington and submitted his processes to scientists there and now has his discovery protected by letters patent and caveats. Not very long ago aluminium was sold at about \$26,000 a ton, but by a process which was considered final the price was reduced at Pittsburg to \$2.50 a pound or about \$5,000 a ton. Emaneul claims aluminium can be freed from kaolin at a cost of about \$2.50 a ton by his process.

TRADE IN CAST-OFF TEETH.

A medical statistician estimates that the citizens of the United States are carrying to the value of £100,000 in the recesses of what ought to be their teeth. There are no people on the face of the globe who have such bad teeth and who spend so much money upon them as the Americans. No doubt the habit of hurried feeding and the wholesale consumption of sweet dishes have assisted much toward this end. But is it not a mistake to suppose, as says the medical statistician, that false teeth set in gold are buried when their owner shuffles off this mortal coil? If this is so in America, it is not so in England, or why the numerous advertisements offering to buy old artificial teeth! The old teeth are not bought to use again, as some nervous people fancy, but simply for the sake of the gold.—*Popular Provider*.

FALSE TEETH LENGTHEN LIFE.

Very few people realize how much the dentist has done for mankind. To mention one thing only, the perfection to which the manufacture of false teeth has been carried has practically abolished old age—that is, old age in the sense I

used to know it. You see none of the mumbling, helpless old men and women that you formerly did. This is not because people do not attain the age their parents and grandparents reached, but because the dentist has prevented some of the most unpleasant consequences of advancing years. Men of 70 no longer either look or feel old because they are not deprived of nourishing food at the time when they need it most. Estimates have been made showing that the average length of life has been increased from four to six years by the general use of false teeth.—*Exchange*.

Here is another argument in favor of care in extracting roots. We copy the following from the daily press, and although the dispatch does not say so, yet it is presumable that the teeth were taken out while the patient was under an anæsthetic. It should prove a lesson to the careless :

HAD A TOOTH IN HIS LUNGS. CAPTAIN BAKER RECOVERS FROM CONSUMPTION BY COUGHING UP AN OLD MOLAR.

DENNISPORT, Mass., Jan. 3.

Captain Allen Baker, of South Yarmouth, has been in a precarious condition from frequent hemorrhages the past two months. During another one to-day he felt a sensation as of a scraping on his right lung. Soon after the root of a tooth, an eighth of an inch long, was discovered. In accounting for this remarkable incident, Captain Baker says that twelve years ago he had some teeth extracted and think she must have swallowed one at that time. Physicians say the hæmorrhages were probably the result of the the tooth being encysted in the lung for so many years, as Captain Baker, heretofore, and his family have always been remarkably well and strong.

THE BLACK TEETH OF MALAYS.

The Government of Burmah has lately published an interesting report by Mr. Merrifield on the prospects of planting in Mergui, in the extreme south of Tenasserim, in the course of which he corrects the common error that the black teeth of the Malays and Siamese are due to chewing betel mixed with lime. It appears that the black color of the teeth is due to a special process employed for the purpose, for no respectable Siamese would like to have white dogs' teeth, like Chinese, Indians and Europeans. Cocoanut kernel is carefully charred, and then worked to a stiff paste with cocoanut oil. When carefully and regularly worked over the teeth this produces the black varnish which is so much admired. Among some Malay tribes it is considered the proper thing not only to blacken the teeth, but to file them down to points, like sharks' teeth. "A Siamese or Malay man or woman does not strike a European as beautiful when yawning."—*Exchange*.

PYOKTANIN.

The aniline colors have among them several members of the fraternity of antiseptic substances. Pyoktanin is the name of the violet and yellow members. Other analine colors will probably assert their properties in that line within a short time. Heretofore we could often find out to what antiseptic substance a surgeon was partial by the various odors that permeated him as with a garment, but at present the hues that variagate his hands will give him away. Members of the profession that are endowed with an artistic eye, will be able to dress wounds with picturesque effect. Too liberal an employment of primary colors,

will be described as rather harsh treatment. There will be ample, steady, reliable elderly gentlemen who will be content with a monochromatic dressing, while others, often of lesser years and more æsthetic tendencies, will stake their reputation and their patient's welfare upon an application of substances cunningly mingled, so as to resemble more in general effect the every-day patchwork quilt of our aunts and the coat of Joseph.—*International Journal of Surgery.*

LIFE AFTER FORTY.

The best half of life is in front of the man of 40, if he be anything of a man. The work he will do will be done with the hand of a master, and not of a raw apprentice. The trained intellect does not see "men as trees walking," but sees everything clearly and in just measure. The trained temper does not rush at work like a blind bull at a haystack, but advances with the calm and ordered pace of conscious power and deliberate determination. To no man is the world so new and the future so fresh as to him who has spent the early years of his manhood in striving to understand the deeper problems of science and life, and who has made some headway toward comprehending them. To him the commonest things are rare and wonderful, both in themselves and as parts of a beautiful and intelligent whole. Such a thing as staleness in life and its duties he cannot understand. Knowledge is always opening out before him in wider expanses and more commanding heights. The pleasure of growing knowledge and increasing power makes every year of his life happier and more hopeful than the last.—*Hospital.*

MODERN MEDICINE.

First they pumped him full of virus from some mediocre cow,
Lest the small-pox might assail him, and leave pit-marks on his brow;
Then one day a bulldog bit him—he was gunning down at Quogue—
And they filled his veins in Paris with an extract of mad-dog;
Then he caught tuberculosis, so they took him to Berlin,
And injected half a gallon of bacillæ into him;
Well, his friends were all delighted at the quickness of the cure,
Till he caught the typhoid fever, and speedy death was sure;
Then the doctors with some sewage did inoculate a hen,
And injected half its gastric juice into his abdomen;
But as soon as he recovered, as of course he had to do,
There came along a rattlesnake and bit his thumb in two;
Once again his veins were opened to receive about a gill
Of some serpentine solution with the venom in it still;
To prepare him for a voyage in an Asiatic sea,
New blood was pumped into him from a lep'rous old Chinese;
Soon his appetite had vanished, and he could not eat at all,
So the virus of dyspepsia was injected in the fall;
But his blood was so diluted by the remedies he had taken
That one day he laid him down and died, and never did awaken;
With the Brown-Sequard elixir though they tried resuscitation,
He never showed a symptom of reviving animation:
Yet his doctor still could save him (he persistently maintains),
If he only could inject a little life into his veins.

—*Ex.*

TO REGULATE DENTISTRY.—A BILL TO MAKE IT UNLAWFUL TO PRACTICE WITHOUT A LICENSE.

SPRINGFIELD, Ill., Feb. 14.—The bill that was introduced this week by Representative Griggs for the regulation of dentistry in this State provides that it shall be unlawful for any person to practice dentistry in the State without a license from the State Board of Dental Examiners. It provides that upon the expiration of the terms of office of the present board their successors shall be appointed by the Governor annually for the term of five years, and he is also to fill any vacancies that may occur. No persons except practicing dentists are eligible to appointments on the board and no person pecuniarily interested in, or in official connection with any dental college or dental department of any school or university. Not more than three members of the board shall belong to the same political party. The board is to examine all applicants for registration and grant licenses to practicing dentists.

Applicants for licenses are required to pay a fee not exceeding \$10, out of which and the penalties provided in the act, the members of the board are to be paid at the rate of \$5 per day of actual service and necessary expenses, but no part of the expenses of the board can be paid out of the State Treasury. Violations of the act are punishable by fines of \$25 to \$50 for first offenses and \$100 to \$200 for every subsequent offense; one-half of the fines and penalties incurred to go to the school fund of the county and the other half to the board. Practicing physicians are not required to take licenses under this act for the performance of such dental work as is usual in their practice.

To the Forum.

TARIFF ON ARTIFICIAL TEETH.

"A day or two ago I had occasion to refer to a paragraph in the Public Press in which it was made to appear the present increase in the price of artificial teeth was wholly due to the tariff act. I said it was untrue. I have no reason to change that opinion, after perusing the article in the Truth Teller of Friday.

The editor comes back with this egregious misrepresentation—"The teeth manufactured in Europe are far superior to any made in this country and are being used almost exclusively by the best dental authorities." Pray who constitute "dental authorities?" He cites the St. Louis Dental Manufacturing Co., as one I know not. I suppose this dental manufacturing concern must be one where you put a nickel in the slot, and out comes a full set of teeth, or out comes one of those full blown dentists from some bogus dental college. Over in Louisville there are forty or more dentists who get, as the dentists of New Albany do, their dental supplies from the same dental depot under the Fifth Avenue Hotel. This dealer carries no stock of European teeth; nor are there more than one or two practitioners of that city who use London made teeth, and then, only occasionally. All American teeth used for plate work have platina pins in them, because they are much stronger and hold to the plate better, but the special and admired quality by this editor is that variety which has holes cut in them where the rubber runs to attach them to the plate. An artificial tooth having these holes cut in it is thereby weakened in taking away so much of the tooth substance. Messrs, Ash & Sons, of London, manufacture these pinless teeth at 5 or 6 cents apiece. A dentist not entirely too scrupulous about using the best materials in these pip-

ing times of sharp competition can sometimes use these foreign made teeth without any discovery by the patient; hence he is loud in chanting the praises of foreign manufacturers.

But, my good friend, the editor jumps with both feet into it when he says—"teeth without pins are much better because the heat expands and cracks the teeth." As there is no warrant for this by any one versed in tooth manufacture, hence your informant is an ignoramus.

Several weeks ago I gave the editor of the Public Press a correct, official copy of the tariff act, hoping he would profit thereby, and now when I correct his mistakes, especially the one in which he affirms that manufactured teeth were $17\frac{1}{2}$ per cent, are now $52\frac{1}{2}$ per cent, he does not look at paragraph 470 of the tariff act. That verifies my statement which shows it to be 20 per cent ad valorem.

The American tooth is a marvel of beauty. It is in the circle of the globe without a rival. It is true to nature and bears the form and perfections of art which the taste and genius of years have contributed. W. F. MORRILL."

AMERICAN MEDICAL ASSOCIATION, SECTION OF ORAL AND DENTAL SURGERY.

The forty-second session of the American Medical Association will be held in Washington, D. C., on Tuesday, Wednesday, Thursday and Friday, May 5th, 6th, 7th, and 8th, commencing on Tuesday at 11 o'clock, A. M.

The following is a list of essayists (with subjects), who have promised to prepare papers for the section of Oral and Dental Surgery.

1. Address of the Chairman of Section, Dr. Eugene S. Talbot.
2. Adenoid Growth, Dr. W. H. Atkinson.
3. Treatment of Fractures of the Maxillæ, Dr. Wm. Carr.
4. Genesis of Countour Fillings, Illustrated, Dr. Geo. S. Allan.
5. The Teeth of Invertebrate Animals, Dr. A. H. Thompson.
6. A Study in Comparative Dental Anatomy, Dr. Wm. H. Potter.
7. Rheumatic and Gouty Diathesis as manifested in diseases of the the Peridental Membrane, Dr. John S. Marshall.
8. Dental Infirmary Patients—The use and Abuse of Dental Charity, Dr. Richard Grady.
9. Growth of the Cementum, Dr. R. R. Andrews.
10. Remarks on Incipient Necrosis and Caries, D. J. L. Williams.
11. Choice of Therapeutic Filling Materials, Dr. W. W. Allport.
12. (Subject not announced), Dr. J. Taft.
13. Thorough Dentistry, vs. Partial Dental Surgery, Dr. J. Y. Crawford.
14. (Subject not announced), Dr. Thos. Fillebrown.

Other members who desire to read papers before this section should, as required by the by-laws, forward the paper or its *title* and *length* to the Chairman, Dr. Eugene S. Talbot, 125 State St., Chicago, one month before the meeting.

HENRY W. MORGAN,
Secretary.

Nashville, Feb. 23, 1891.

A VERY EXPENSIVE DRUG. TWO OUNCES OF PHYSOSTIGMINE WOULD COST YOU
\$1,810,020.

We would, perhaps, wonder less at the fancy charges made by physicians and surgeons who have rare and exceptional cases in charge if we only knew the

cost of drugs they use in special diseases. The army of "the curious" will be interested in the following list of scarce and expensive drugs.

Three-pound bottle of alkaloid of aconitine, \$485.50; quarter-ounce vial of chelidonine alkaloid, a new drug used in skin diseases, scrofula and dropsy, \$88; cocaine, about \$120 a pound. A 5-ounce bottle of "true cotoin" will cost about \$350, or about \$70 an ounce. Crystals of elaterin, a poison used in cases of hydrophobia and lockjaw, prepared from a plant called South American Indian arrow, is worth about \$145 an ounce.

Among other costly drugs may be mentioned the following and the different sized bottles and vials in which they are sold: Agaricin, 4½ ounces, \$43.75; colocynthin, 5½ ounces, \$114.75; conline hydrochlorate, 4½ ounces, \$98.45; cyclamin, 3¼ ounces, \$54.04; digitoxin, 1¼ ounces, \$87.40; gentisin, 1½ ounces, \$91.15; heliotropin, 6 ounces, \$61.25; dydrastine hydrochlorate, 6½ ounces, \$194.80; papayotin, used as a solvent for the diphtheric membrane, 13-ounce bottle, per bottle, \$189.50.

Besides the above there are various preparations made from the Calabar bean the cost of which is amazing. They are chiefly used in diseases of the eye. One is called physostigmine alkaloid and costs \$137.50 per ounce vial. Physostigmine crystals are still more expensive, being sold in 2½-ounce bottles at a cost of \$503.15. Still another preparation of Calabar is physostigmine calicylate crystals, an aristocratic drug that surely furnishes a fitting capsheaf for this pyramid of costly stuffs, which is furnished to the consumer who is able to pay at the reasonable charge of \$1,810,020 for a 2-ounce vial.—*Ex.*

In view of the possibilities of aluminium in dentistry, the two following extracts from the press may prove interesting:

ALUMINIUM TO THE FRONT.—SANGUINE EXPECTATIONS OF THE PRODUCTION OF THE METAL ON A LARGE SCALE.

The "age of aluminium," hitherto predicted only by enthusiasts, would seem to be nearer than has generally been supposed. For some time the Cowles Electric Smelting and Aluminium Company, of Lockport, has been preparing to produce aluminium by a new process, which is claimed to be a successful solution of the problem of a cheap extraction of this metal from common clay. Eugene H. Cowles, president of the aluminium company, said to-day: "We now expect to offer a pure metal made by a new process that is radically different from anything yet known to metallurgists—a process that is ridiculously simple in operation and almost theoretically perfect. By reason of two chemical discoveries it is found that the pure metal can be extracted direct from the clay. This can be done without the use of electrical heat. When operated on as large a scale as that on which iron is produced aluminium will be produced at a cost permitting it to sell at \$200 per ton, a price less than the present price of copper. Alterations will be made immediately in our works here to make the metal on a large scale. Capitalists in New York are preparing to build immense new works of probably twenty times the capacity of the Lockport works. One of the large plants will undoubtedly be at Niagara Falls, where 10,000 to 12,000 horse-power will be required to operate it.

"As soon as the plant at Niagara Falls is in operation—say by July, 1892—the world can expect a supply of aluminium at least 99 per cent fine at prices not to

exceed 50 cents per pound. As methods have lately been discovered by which the metal can be hardened and its strength greatly increased without interfering materially with its toughness and lightness, it would really seem as if the aluminium age were at hand,"

PROGRAMME OF THE ILLINOIS STATE DENTAL SOCIETY.

TO THE EDITOR;—*Dear Sir:* The following is the programme arranged for the annual meeting of the Illinois State Dental Society, to be held at Bloomington, Illinois, beginning Tuesday, May 12, 1891, and continuing four days:

1. Annual Address by the President, Dr. Truman W. Brophy, of Chicago.
2. Report of the Committee on Dental Science and Literature, by Dr. J. D. Moody, of Mendota, *Chairman*.
3. Report of the Committee on Dental Art and Mechanism, by Dr. W. B. Ames, of Chicago, *Chairman*.
4. How to deal with the Condemned Pulp, by Dr. J. G. Dickson, of Carmi. Discussion to be opened by Dr. J. G. Reid, of Chicago.
5. The Preparation of Teeth for Filling, by Dr. Edmund Noyes, of Chicago. Discussion to be opened by Dr. George H. Cushing, of Chicago.
6. Prosthetic Dentistry.—By Dr. W. T. Magill, of Rock Island. Discussion to be opened by Dr. E. C. Stone, of Galesburg.
7. Third Period in the History of Dentistry, Continued with Biographical Notes.—By Dr. John J. R. Patrick, of Belleville.
8. Experimental Studies on the Action of Diffusible Medicinal Agents in Living and Pulpless Teeth.—By Dr. A. W. Harlan, of Chicago. Discussion to be opened by Dr. P. J. Kester, Chicago.
9. Architecture of the First Upper Molar.—By Dr. Alton H. Thompson, of Topeka, Kansas. Discussion to be opened by Dr. A. B. Freeman, of Chicago.
10. A Lantern View of the Pulp Chambers and Canals, Showing Typical Forms and Variations.—By Dr. D. M. Cattell, of Chicago. Discussion to be opened by Dr. G. V. Black, Jacksonville.
11. Efficiency and Simplicity in Regulating Appliances.—By Dr. E. H. Angle, of Minneapolis, Minn., illustrated by stereopticon. Discussion to be opened by Dr. C. S. Case, Jackson, Mich.
12. Low Fusing Continuous Gum Body, by Dr. George Cunningham, of Cambridge, England. Discussion opened by Dr. W. B. Ames, Chicago.
13. Report of Supervisor of Clinics by Dr. Louis Ottofy, of Chicago, *chairman*, with discussion.

Dr. Ottofy, Supervisor of Clinics has made arrangements for the following clinics to which two half days, Wednesday and Thursday mornings, will be devoted.

Dr. W. O. Kulp, Davenport, Iowa.—Art Technique.

Dr. I. P. Wilson, Burlington, Iowa.—Root-filling.

Dr. R. H. Mace, Belleville, Ill.—Gold Crown.

Dr. W. H. Taggart, Freeport, Ill.—Filling at the Cervical Border, using extension arm cervix clamp; also a new Suspension Removable Bridge.

Dr. W. B. Ames will demonstrate Dr. Cunningham's Low Fusing Body for Continuous Gum.

Dr. Edgar Palmer, of La Crosse, Wis.—Administration of Narcotic Vapors, using valved inhalers.

Dr. A. O. Hunt, Iowa City, Iowa.—A New Bridge.

Dr. E. E. Hughes, Des Moines, Iowa.—Gold Inlay.

Dr. Geo. H. Slyfield, Waukegan, Ill.—Contour Gold Filling.

Dr. K. B. Davis, Springfield, Ill.—Artificial Crown.

Dr. S. F. Duncan, Joliet, Ill.—Method of Striking up Crown Tips.

Clinicians are requested to provide themselves with the necessary instruments.

It is particularly requested that those having pathological specimens, peculiar cases, models, new appliances and methods will bring them to the meeting.

The utmost effort will be put forth to make both the scientific and practical features of this programme instructive and interesting.

Recognizing the opportunity afforded in our annual meeting for recreation and pleasant social intercourse, no pains will be spared to promote acquaintance and fellowship.

All practitioners of Illinois (including non-members) and of neighboring States are cordially invited to attend. They are especially urged to be present at the opening day and to remain through to the last session.

The usual reduction in hotel rates and railroad fares will be allowed.

J. W. WASSALL, Chairman Executive Committee.

OBITUARY.

C. R. COFFIN, M. D., D. D. S.

In London, England, on December 29, 1890, passed away one of the best known dentists of Great Britain. Dr. Coffin had resided in Manchester and London for thirty-six years, and during the whole period of his sojourn abroad his house had been open to any American dentist in passing through, or destined to remain in the metropolis. Of a kindly disposition and generous to a fault, it was his opportunity to lend a helping hand to many now living abroad who join with us in offering our sincere condolence to his surviving family. We append the following from the *Journal of the British Dental Association* for January 15:

DR. C. R. COFFIN. It is with sincere regret that we announce the death, on the 29th of December last, of Dr. C. R. Coffin, of Kensington, at the comparatively early age of sixty-five. Dr. Coffin was born and educated in the United States. He studied his profession at Boston, and obtained his qualification at Baltimore College in 1853. In 1855 he came to this country, where he has practiced ever since, for a few years in Manchester and since then in London. Dr. Coffin's health had been failing for some time, and his friends had long ceased to entertain any hopes of his ultimate recovery; he had not taken any active part in the practice since 1885.

He made some interesting experiments on the properties of gold foil in removing the excess of mercury from amalgam fillings, but the main sphere of his work lay in private practice. In Dr. Coffin we have lost one of those American dental surgeons of whose fellowship we are proud, and whom we gladly welcome to our professional circle.

In accordance with a frequently expressed desire, the remains of Dr. Coffin were cremated on January 2, 1891.

THE DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

NECROSIS OF MAXILLARY BONES.*

BY T. L. GILMER, M. D., D. D. S., CHICAGO.

In preparing this article I have intentionally omitted going deeply into the pathology of the disease under consideration, but have aimed to present its clinical history and treatment more fully.

Pathological text-books present learned discussion, and are very full in their treatment of the tissue changes which take place during their transition from perfect health through disease to death. Therefore, it is unnecessary to spend much time on this phase of my subject, since I can add nothing beyond that which is already known.

Dr. Ingersoll's chart in his work "Dental Science," showing the progressive stages from irritation through inflammation to gangrene, necrosis and somatic death, perhaps gives the student, at a glance, a better idea of these changes than can elsewhere be found.

Death of soft tissue is designated gangrene, and death of the hard structure necrosis. However, there is coming over from the German a disposition to make necrosis cover both cases in either instance, and, since necrosis means death, it would seem that the German method of treating death of either structure under one name indicates the correct idea. Gangrene and necrosis have besides a general, also a special significance, indicating *local* death, while somatic death is equally significant, and denotes death of the

*Written for the Odontological Society of Chicago.

body in its entirety. In somatic death tissue elements may live for a limited period after the heart and lungs have ceased to perform their functions. In local death it is the converse condition—the tissue elements involved cease to live before the action of the heart and lungs stop.

ETIOLOGY.

The cause of local death, or necrosis, may arise from traumatism, from a lack of vitality in the cells, from extreme heat or cold, sufficient in either case to coagulate or congeal the blood in the capillaries of the parts, from the cells of the parts coming in direct contact with cauteries or extreme irritants, from the poisonous effects of septic material, from continued external or internal pressure, from the plugging with blood clots of blood vessels supplying the parts, from mercurialization, from syphilis, from eruptive fevers, from mumps, and from phosphorus.

Some bones of the body are more subject to necrosis than others. Those bones less plentifully supplied with nutrient vessels, for instance, the inferior maxillary bone. Statistics show that the lower jaw is five times more often the seat of the disease than the upper. The difference in the nutrition of the parts easily accounts for this marked predominance of the disease in the lower jaw over the upper. When I have found necrosis in the upper jaw I have usually been able to trace it to either traumatism or syphilis.

The conditions causing necrosis in any other bone of the body if present in the maxillary bones, may cause it there. Besides there are special conditions which may exist in the maxillary bones to cause the disease which does not exist in other parts of the body; for instance the fracture of the process in the extraction of teeth, and by periosteal and peridental inflammations caused by the deleterious influences of septic material passing out from the roots of teeth into the adjacent tissue, the destructive influence of arsenious acid when carelessly applied to the pulps of teeth for their destruction, and from any serious inflammation dependent upon difficult dentition, such as is sometimes present consequent upon the eruption of the third molar. Necrosis may be caused by injuries incident to dental operations, by the inoculation of the parts with specific poisons through the medium of contaminated instruments. Necrosis has been attributed to the use of matches as toothpicks, small quantities of phosphorus being lodged between the gum and tooth, afterward working its way down to the peridental membrane and pro-

cess, inciting an inflammation, or gaining access to the bone through the canals of roots of teeth which have dead pulps. And again there are unseen causes which leave us in doubt regarding their source. I have met with necrosis in the lower jaw when its origin could not be traced certainly to any source. To illustrate : a Mr. B— was sent to me last winter by a prominent dentist in Chicago for treatment. Upon examination I diagnosed the case necrosis of the outer plate of the anterior portion of the inferior maxilla, extending from cuspid to cuspid.

The patient is a carpenter by trade. He had no symptom of any dyscrasia, had never had an accident to which the condition could be attributed. He had had no serious illness. His teeth in the vicinity of the diseased portion of the jaw were all sound and there was no evidence present that they were in any way responsible for the disease. Indeed, I looked in vain for the cause of the condition which I found. I have had a number of such cases. Have at this time under my care a boy nine years old who has lost all of the bone on the right side of the lower jaw from the symphysis menti to a point half-way between the angle and the condyle, and the probabilities are that that remaining on this side of the jaw will be lost. If the history given me of the case was correct, there had been no observable cause to which the disease could be attributed. The extent of destruction of bone by this disease in this locality varies from a part of the process the size of a pea or less, to the entire jaw, dependent upon the nature and extent of the injury, the physical condition of the patient and the care and attention he receives.

It is the custom of most writers on this subject to enumerate in the symptology the conditions usually present in sthenic inflammations, that is pain, redness, heat and swelling. This is a condition which may be a forerunner of necrosis, and when intense and protracted, may become a cause; but by no means does it generally result in death of the parts involved. Therefore I will omit as a symptom of necrosis the earlier stages of inflammation, and give indications which are present at the time capillary circulation of the part involved is permanently stopped and the cells are dead or dying from lack of nutrition.

Usually at this stage there is but little pain, perhaps no fever; if the bone be punctured with an instrument, there is the absence of sensation, which will always be found present in live or healthy

bone. The gum over the dead bone is generally swollen and has a deeper red appearance than is found over live bone. There is usually a flow of pus from around the necks of certain teeth, or from one or more sinuses in the gum, or perhaps on the face : this pus is generally fetid. The teeth in the necrosed bone are usually loose.

The presence of a sequestrum is *prima facie* evidence of the disease, making it impossible to confuse necrosis with caries of bone.

Caries is an ulcerative process, destroying the tissue cell by cell, much as an ulcer in the soft parts, while necrosis represents the process which destroys *en masse*. The appearance of the gum about pus openings over carious bone is usually quite different from that over necrosed bone; that over carious bone is surrounded by rings of granulation tissue, while the sinuses from necrosed bone are usually simple openings without these granulations.

Another diagnostic difference between the two diseases is, upon touch necrosed bone will be found hard and unyielding, while carious bone is friable, easily cut or burred. Another symptom of necrosis of bone which never accompanies caries is persistent induration of the soft tissue overlying the dead bone; this hardened condition of the soft tissue is usually present, and if so, remains as long as there is dead bone underneath; after its removal the parts slowly take on their normal condition. If the disease is extensive and of long standing the patient is usually anæmic, and if there has been much absorption of pus, he may show symptoms of septicæmia.

TREATMENT.

The treatment of active inflammation from which the necrosis may have originated is out of place in treating the subject under consideration. That all active inflammation of the jaws may lead to necrosis is certainly true, and therefore, proper prophylactic treatment in anticipation should always be made, but our subject is necrosis, and the treatment offered will be directed to the disease after it is certainly diagnosed as such. In the treatment of necrosis it is well to remember that the best we can possibly do is to assist nature. There are a few important measures to be observed, viz.: cleanliness of parts, keeping the dead and diseased bone in as nearly an aseptic condition as possible (this is of prime importance), the removal of dead bone as soon as separated from the living, stimulation of the parts to healthy action, and if the pa-

tient's system is enervated, supportive measures should be adopted. It is not considered by the most experienced surgeons desirable to make exsections or resections of bones under necrotic influences. Such active measures may be the cause of an extension of the disease, while if suitable precautions are observed, nature may usually be entrusted to mark the line of demarkation, when the sequestra will be easily removed. The separation of the living from the dead bone is in some cases a slow process ; even under the best treatment months may be required before sequestration is complete ; while in others, nature is exceedingly active the sequestra being thrown off in a few week's time.

Usually when the patient presents, if the disease be fully established, there is, as before said, a fetid discharge of pus, which is very deleterious to the patient's welfare, besides rendering him exceedingly offensive to those who must be about him. By opening up the soft parts so that perfect access may be had to the dead tissue and by first washing out the pus pockets with peroxide of hydrogen, and then with an aqueous solution of the permanganate of potash, the odor may be abated; and if the potash solution be frequently used as a wash, the mouth may be kept free from offensive odors and in a generally wholesome condition. The potash solution may be used in strength of from two to four grains to the ounce of water. Peroxide of hydrogen is the best of all cleansers where there is pus, and in necrosis, pus is always present. Before the application of antiseptics, in order that the medicaments may be certainly brought in direct contact with the diseased tissue, peroxide should be employed to remove the pus, blood or dead tissue which might otherwise intervene. As soon as there is a separation of the dead from the living bone the sequestrum should be removed, as its presence is a source of irritation and liable to cause an extension of the trouble. All teeth which may be a source of irritation should be extracted. The pus pockets after thorough washing with peroxide of hydrogen, unless the parts need stimulating, may be packed with cotton dipped in campho-phenique, or water saturated with oil of cassia, and the opening closed with cotton dipped in chloro-percha. If, after the application of the medicament, the openings have been thoroughly closed the campho-phenique or cassia odor will be very perceptible on the cotton dressing the following day, when the treatment should be repeated, and the dressing renewed in order that the parts may at all times be under the most

perfect aseptic conditions. If there is an inactivity of the parts, the application of aromatic sulphuric acid will prove beneficial. It may be conveniently applied on cotton and used in full strength or diluted one-half with water. Aromatic sulphuric acid is antiseptic and stimulant. It also has the reputation of dissolving dead bone, which is true to a limited degree, but I do not believe it possesses for this purpose sufficient power when applied in the mouth to make it valuable.

If the patient cannot be seen each day for a change of dressing, then perhaps a better plan of treatment than packing the pockets, is to supply him or his attendant with a syringe in order that the parts may be thoroughly cleansed each day, using as a wash either peroxide of hydrogen followed by carbolized water, or by a permanganate solution. But the progress of the disease should be closely watched by the surgeon, the patient reporting at least once or more times a week. If the disease depends upon specific causes, such as syphilis, before a cure can be made, specific medication will be necessary, and with this treatment the same local application and other precautions are equally necessary as in those cases dependent upon other causes. The hygienic conditions should be the best all through the course of this disease. The patient should be nourished on good strong tissue building food, that which will give the greatest support to the system, and if he be in an anæmic condition, internal medication should be resorted to. Quinine and iron (the muriated tincture is considered preferable) make a combination which gives, usually, good results. In cases where there is hæmorrhage, either from the removal of sequestra or otherwise, which may occasionally occur in the progress of the disease, usually syringing the parts with hot water suffices to arrest it. If it should not yield to this treatment, packing the pockets with cotton dipped in a mild astringent, such as alum water or phenol sodique will generally control it, or the cavity may be plugged with cotton and tannic acid. Monsel's solution, or any of this class of iron hæmostatics are not desirable since owing to their caustic influence they cause death of so much of the surrounding tissue, and when the clot and slough which it causes is removed there is often a more serious hæmorrhage than before. Galvano cautery is a very effective remedy for this trouble.

If the patient is of a hæmorrhagic diathesis the internal administration of the tincture of iron is very useful in preventing hæmor-

rhages. The most important points in the treatment of this disease are cleanliness, removal of sequestra as soon as separation takes place, stimulation of parts to healthy action, supportive measures, if the patient be anæmic, and the prevention and controlling of hæmorrhages. In order that there may be as little disfigurement as possible after restoration to health, there is occasionally, though very rarely, a case which requires an appliance to support the parts while new bone is forming. I have a case under treatment which demands such an appliance. A large part of the bone on the right side of the lower jaw is lost. The formation of new tissue has not, on some account, been sufficiently active to give support to the parts as the old bone was thrown off. On this account the left half of the jaw, which I was able to save intact, was being bodily moved toward the diseased side, disfiguring the patient exceedingly. In order that the bone of the right side might be held in its normal relation to the corresponding side above, I made and applied a splint which I believe is original with me, the process and application of which may be described as follows: An impression was taken of the teeth from the remaining half of the jaw, a cast made and a silver plate struck up to fit these teeth.

In shaping this plate a flange was formed on its buccal side sufficiently high to rest against the buccal surfaces of the corresponding upper teeth, so that when the mouth was moderately wide open the flange would still rest against the teeth, preventing the jaw being bodily moved toward the right side. This plate was cemented to the teeth below with phosphate of zinc, and in order that the mouth should not open wide enough to allow the flange to pass under, and by the upper teeth, a sling was fitted to the chin, supported by straps buckled to a skull cap, which, owing to their elasticity, allowed considerable perpendicular movement, but not enough to permit the flange to pass the upper teeth. This will remain in place until sufficient tissue forms to support the parts.

PHAGOCYTOSIS IN DENTAL LESIONS.*

BY F. W. SAGE, D. D. S., CINCINNATI, O.

It is the object of this paper to review somewhat in detail two papers published in the January number of the *Dental Advertiser*, the titles of which are "Phagocytosis," and "The Mechanism of

* Read before the Mississippi Valley Dental Society.

Infection," respectively, the authors being Dr. Frank W. Low, of Buffalo, N. Y., and Dr. Bouchard, of Paris.

Phagocytosis is fully defined by Dr. Low. Without presuming too much on our hearers, not having read the articles referred to, we venture to present in the briefest terms his definition.

A "phagocyte" then is a cell which possesses the power in a greater or less degree, of appropriating and devouring solid particles. He names five tissues in which these phagocytes or amœboid cells abound: as we shall have in this paper to consider more particularly the invasions of the pyogenic microbe, we shall here name one only: the white corpuscles of blood and mucus. Phagocytosis is then, according to the definition, and for our present purpose, an exhibition (in that interesting phenomenon commonly known as suppuration) of the battle going on between the powers that waste and the forces that tend to prevent waste of tissue. The microbe is the invader seeking to break down and lay waste; the phagocyte is the watch-dog set to destroy the invader.

Notwithstanding Dr. Low's admirable presentation of the details of various experiments made by way of attesting the truth of a theory he advances, he seems to the writer to have fallen short of what he has attempted. He says:

"Where teeth, on the one hand remain in the jaw after treatment, they shortly become, apparently, *perfectly* healthy; (a condition that could not obtain so long as pyogenic micro-organisms were present in the tissues); on the other hand, those having been first extracted and *then* experimentally treated, have almost, if not quite, invariably developed bacteria cultures. Having in mind these facts, but one inference is rationally to be drawn, namely: That the phagocyte cell acts as the factor of elimination, devouring all bacteria, both in the pulp canal and in the tissue about the apex of the root," and then after calling attention to Dr. Miller's assurance of the inadequacy of any and all agents at present employed to effect a perfectly aseptic condition of tooth-roots, and having also directed attention to the success attending the sole use of dry hot air and simple mechanical cleansing of roots before filling, he adduces the following experiment: An upper molar having putrescent pulp canals, was extracted, suitable precautions being at once taken against the possible ingress of pathogenic microbes, after which the pulp chamber and canals were carefully treated by the "immediate root process." (I quote his words.) The roots

were then split open and immersed in agar-agar. Almost immediately, the anterior buccal root, which he states *had not been filled*, yielded a colony of cocci. The filled roots, however, gave no such result.

The writer admits his inability to see that this experiment illustrates the truth of Dr. Low's statement already quoted, that teeth having been *first* extracted and *then* experimentally treated, have almost if not quite, invariably developed bacteria cultures. The result of the experiment seems to establish the exactly opposite fact. It is, however, a matter of no little moment that if the "immediate treatment process" employed (again I quote his words) was according to the method of using simply dry hot air and mechanical cleansing, to which he referred, the success of that method of procedure seems well enough established. It is unfortunate that Dr. Low does not explicitly state what he meant by the "immediate treatment process," still, in view of what he has said of the success of the "dry air and mechanical cleansing process" it seems reasonably safe to assume that he used no medicaments. And yet in view of what we shall presently attempt to consider, it is not essential to our purpose that we should insist on the assumption that he used no medicament. The result is in any event interesting, as indicating the fact that whatever disturbances may follow the "immediate root-filling" process, we should direct attention to the apical space.

Dr. Low has distinctly declared that no cultures developed in the two filled roots. Again referring back to his statement that "the phagocyte cell acts as the factor of elimination, devouring all bacteria both in the pulp canal and in the tissue about the apex of the root," we say that the result of his experiment seems to plainly indicate that in the case of the unfilled root this inhibitory action had not taken place. It is not then unreasonable to assume that neither had it taken place in the other two roots so successfully filled. We point out the significant results of this experiment not in any spirit of cavil; the valuable results incidentally shown—of the "immediate root process"—are of sufficient interest to us, for present consideration, and call for an expression of gratitude to be tendered Dr. Low.

It is worthy of passing comment at least, that this single experiment of Dr. Low's seems to refute Dr. Miller's statement that "beyond all doubt none of the agents now employed to bring about

a perfectly aseptic condition of tooth-roots, are equal to the emergency.* It would seem that Dr. Miller did not have in mind dry hot air and mechanical cleansing, if we are right in assuming that upon them alone Dr. Low relied in his experiment. We find on following Dr. Low further on, that he assumes that his readers must regard with incredulity the idea of the phagocyte's penetrating the dentinal tubules, or even the foramen of the pulp canal. Why he should assume such incredulity we are at a loss to understand, unless it be as regards the dentinal tubules only, for it seems to be implied in the quotation which we are about to give, that the phagocyte is capable of reaching any point to which the blood has access. We again quote:

"The writer would venture the opinion that when stasis is complete, the battle goes against the phagocyte, because reinforcements can no longer come to the rescue, while the bacteria proliferate without further hindrance, receiving new colonies with the impactment of each morsel of decomposing vegetable or animal matter that lodges in the cavity of decay."

Leaving at this point the special consideration of Dr. Low's paper, and preserving in mind only the fact which he seems to have demonstrated that roots may be at once rendered aseptic by simple means, we find before us a field for interesting speculation as to what takes place in the "always-present-abscess"† at the apex of the tooth—or beyond that point, after the filling has been inserted. At the risk of rehearsing what is already trite, the writer refers to a time when the most heroic treatment for alveolar abscess was the only kind of treatment to which any reference whatever was needed, by at least one author whose work is to-day in the hands of every dental student. That was the total eradication of the abscess by an operation directed through the alveolar wall. About seven years ago the writer of this had suggested to him—through his observation of the results of empirical practice on his own part and on the part of other practitioners—the feasibility and the expediency of filling diseased roots after cleansing and disinfecting merely, and oftentimes without attempt to reach the abscess. That is to say, he discovered that in the cases of individuals of certain temperaments, no unpleasant reaction followed this modified course of treatment.

*The context shows that Dr. Low recognized the full significance of his experiment, in this particular respect.

†Dr. Flagg.

In view of the latest discoveries in bacteriology, it will be seen that this was a leap in the dark. At this day, in the light of recent revelations whereby we are enabled to identify and classify not only the various pathogenic microbes, but also their several foes lying in wait to guard the tissues against their inroads, we seem almost to have reached a stage when it shall be possible to define such hitherto vague terms as diathesis, vital resistive force, and *vis medicatrix nature*. The florid complexion, red hair, bulbous nose, of the individual of an inflammatory diathesis, seems already to suggest something better than the vague term "predisposition;" it calls for the identification of the special microbe producing the specific disease, and at the same time leads on to the naming of the particular phagocyte, the absence of which allows of the proliferation of the mischief-breeding microbe.

It is interesting to recall various small items which a few years ago were significant as *causes* of inflammation, although they fell short of supplying in explicit terms the why and the wherefore of their being causes. There was the "infected broach," which being inserted into the root canal, provoked the quiescent abscess to renewed activity. Or, on the assurance that the broach used had been carefully sterilized, irritation was attributed to the forcing through the foramen of effete matter already contained in the root.

No one seems to have discovered a solution of what was, after all, a mystery attending this matter, notwithstanding Lister long ago dropped a hint which might have been appropriated by the dental profession, in a suggestion made that the lance should be applied to abscesses in the soft tissues only after having drawn the integument obliquely aside, so that on its return, after being released, the air might be excluded. In view of what Dr. Bouchard has to say regarding the phagocyte and the bactericidal condition, it will not be difficult to account for the fact that the infected broach, in the hands of a most reckless operator, does not invariably excite inflammation. For an explanation of this we refer the auditor to his admirable paper.

But to return to the inquiry, "What takes place beyond the apex after the roots have been filled?" To discuss this question exhaustively would take more time than the writer feels is properly allotted to him; he will, therefore, call attention to only a few features of what seems reasonably well established. We are continually tempted to turn aside, lured by the curious use of terms in

vogue only a decade ago--"laudable pus," "decomposition of pus recurring in secondary inflammation," and so on.

But to resume: The treatment of alveolar abscess in years past has been founded on a principle of reasoning from effect to cause, without an intelligent apprehension of the nature of either the effect or the cause. We argued the necessity of stopping the root canal after a course of treatment, in order to obliterate or do away with a reservoir into which fluids might seep, there to decompose and "react" upon the parts beyond. The condition thus brought about was one in which, in the popular parlance, the lymphatics could have an opportunity to control, absorb, or what not, the seeping fluids. In all this there was no recognition of what Dr. Bouchard terms the bactericidal condition, accessory to the aggressive function of that microbe destroyer, the phagocyte. We knew that through the use of medicaments we could induce, sooner or later, a condition in the abscess of tolerance, which we recognized as the restoration of the balance between the so-called vital resistive force and the disease-breeding agents. But that this was a chemical condition slowly brought about, through which microbes of infection were destroyed, we had no suspicion. We viewed the recurrence of swelling in the gum, months and even years after our treatment of roots, noting the absence of pain, but being unable to account for that fact. There the microbes, according to Dr. Bouchard's theory, were again at work, but with weakened functions, owing to the fact of their having to contend with the vaccine elements of other colonies of microbes once occupants of this field. Here again we recall a principle laid down in works on surgery: "That a part once inflamed becomes weakened, inviting a recurrence of inflammation on the slightest exposure to the causes of inflammation." The recurring inflammation may be persistent, but it is of the low grade indicated by the word "chronic." The microbe is persistent because through the prevention of vascular dilatation, exudation, and diapedesis, the phagocyte is afforded no opportunity to combat him. At the same time, as Dr. Bouchard affirms, the microbe's functions are embarrassed from the fact that while on the one hand it secretes irritant matter, it also secretes these vaccine elements before referred to, the protective influence of which presently begins to be manifest.

In this desultory way we believe we have gone over the principal ground of research in what most concerns us as dentists to

know, as regards the action of microbes in alveolar abscess at least. The question, "what becomes of the abscess?" may be briefly answered, whether it be subjected to a single treatment or a dozen treatments—unless of a heroic character—it remains merely in a state of abeyance only so long as the bactericidal condition prevails.

DOCTORATE ADDRESS.*

BY CALVIN S. CASE, M. D., D. D. S., JACKSON, MICH.

MR. PRESIDENT; MEMBERS OF THE FACULTY; GENTLEMEN OF THE GRADUATING CLASS; LADIES AND GENTLEMEN:

The day which so many have looked forward to for years with feelings of ambition, hope and anxiety is at last, the now; and again the faculty of the Chicago College of Dental Surgery find themselves performing their closing, but always their happiest duty to a class of dental students.

Not the happiest necessarily because it is the last, but because it is always a pleasure to crown the winners of a hard and difficult contest. And if, as in this instance, it has been a strife for ability to combat diseases of humanity and to restore the functions of lost organs by manipulative skill, then indeed it is a pleasure, and a proud moment to the faculty of any college who can honestly say to her graduates: "We have brought you to the door of a great profession, and can now trust you to go forth to the individual accomplishment of that which we have endeavored to teach."

Since the first annual commencement of this college, each graduating class has outnumbered that of the year previous, necessitating a constant increase of her facilities and corps of teachers to keep pace with this most healthy growth.

Ever striving for quality rather than quantity, it has always been the aim of this college to give to her students the highest order of didactic and practical instruction at whatever cost, and to so increase her repertoire that each class, however large, shall go forth better prepared than former ones, for the battle of life.

With what success these efforts have been crowned, need not be told in Chicago where evidence of her work is found among the

*Delivered at the Ninth Annual Commencement of the Chicago College of Dental Surgery.

most prominent of the dental profession ; and the names of many who have been in some way connected with this college—either as students or teachers—are prominently enrolled among the builders of modern dentistry, and familiar in every land where it is practiced.

This year it has fallen to my lot to say her farewell words to the class of '91.

I have accepted this honor with the hope that I may say something worthy to be associated in memory with this most prominent landmark of so many lives ; and something too, in keeping with this greatest of gala days—this day of welcome rather than farewell : For is it not a day of births—the birth in fact of '94 infants—and *all boys*. Just think of it !—And from one mother too, who will be known to them in after-life as their Alma Mater !

You who have gathered here to witness this happy event, and strew flowers in their paths with hearty congratulations and wishes for future success, can hardly realize what this day is to them, after months of anxious earnest striving to master the difficult and almost insurmountable requirements of a college curriculum. They feel at last that the clouds which have gathered dark and threateningly over the “final,” have suddenly been lifted by that magic word “passed,” and the sunshine of victory let in to their tired souls, gilding in golden colors many dreams that had long been shrouded in gloom.

One evening just twenty years ago this month I also was fortunate enough to be one of a class of dental graduates, who were impatiently waiting as you are to-day, with sheepskins in hand, for the final words from lips which had for months been tiring us out with talk. And now when I look back at that scene, with its small group of young men gathered in the front row on one side of the rostrum, in that uninviting and dimly lighted lecture room of the old college ; its few scattered friends who kindly graced the occasion ; its quietude and solemnity, and compare it with this scene of brightness, tone and perfection ; to this immense gathering of waiting relatives and friends ; and with all that could in any way tend to crown this scene with glory, I can but congratulate you young gentlemen upon the fact that you commence your career at a time when it is more fashionable—and necessary too—to become a dental graduate.

Yet that modest circumstance twenty years ago marked the proudest moment of my life ; and when I remember that not one of that class has ever disgraced his calling ; that a few have gained

something more than local distinction ; and that our diplomas bear the time-honored names of George Watt, James Taylor, H. A. Smith, C. M. Wright and J. Taft, I can but feel proud that I belonged to that class of '71, from the old Ohio College of Dental Surgery.

I have mentioned this incidentally because it has its lesson for us to-day ; and if in using some of the thoughts which were there impressed upon my mind they have the same influence with you in the future that they have had in all these years upon me, then indeed will you remember this day for something more than the pageantry of your entrance into a great profession.

We fully appreciate the fact that it has been no easy task for you to arrive at your present position ; that brain and hands have been taxed to their fullest powers ; that you deserve great credit for the degree of perfection you accomplished in your college work, and thanks for the gentlemanly courtesy you have observed under many trying circumstances. Yet while you stand to-day in possession of many acquired accomplishments, and with a degree at whose source you may well feel proud, we wish you to remember and to distinctly understand, that you have but arrived at the threshold of dentistry.

Do not imagine your work is done, and that now you can put aside your books. A great field with a broad expanse, teeming with vast opportunities is but opened to you, in which all who make progress continue to wear the armor of students.

In the short course given you it has been impossible for the different departments to teach more than foundation principles ; so selected and systematised to be sure, as to represent completeness, and yet but a skeleton, which we leave in your hands knowing that each must develope it in contour and symmetry according to his individual ability and disposition to progress.

We therefore ask you to rid yourselves of every vestige of belief that you have completed your education and now stand as masters of your profession. Why, the most learned and skillful of dentists never feel they have a right to such a claim. Their experience has taught them that they are but one of many in a fraternity whose progress is so rapid, unless they keep constantly buckled into the harness the vehicle will go off without them.

This is the secret of the phenomenal development and progress of the dental profession, and one reason why she stands proud

and independent among the most advanced arts and sciences of our day.

There is however an occasional exception, in the rank and file, to this most desired rule of modesty; more often found I think among those who are certainly old enough to know better. Possibly they have out-lived their time, and—as our friend Swasey would put it: “are back numbers, way out of print.” We sympathize with them and we thank them from the bottom of our hearts for the good they have done, but nevertheless we pass them by.

Abnormal cephalic enlargement is a not uncommon disease with young graduates, and is a condition which does more to retard advancement and antagonize fraternal association, with its indispensable influences, than anything else. Self-conceit, egotism, and cheek may sometimes pass for knowledge, but not long, nor among those whose good opinions we should most value; and what is more, when one is weighted down with these tendencies they are soon left behind with McGinty in a rut, from which had they the power to look, they would see the dental profession far in advance pursuing the even tenor of her ways.

We are aware it is difficult for a man to correctly estimate his own worth, for new duties, especially in an untried competition with others of experience who have possession of the field; and that when one has done all in his power to equip himself properly he has a right to go manfully to the contest confident of success.

We have no desire to rob you of faith and a fair estimate of your ability; we have a good deal of faith in it ourselves, knowing where and how you have been educated, but we wish to caution you against flaunting your accomplishments or any claim to superiority in newspapers and elsewhere.

By living strictly in accord with professional ethics you will command the respect of the profession and the community in which you live.

Ever observe a dignified respect for the opinions of your confrères, and in their absence never, *never* attempt to underrate their work or ability.

It is impossible for a man to build a safe foundation for himself upon the ruins of another.

A few years ago wishing to aid a young graduate, I sent a young girl patient to him for the extraction—with gas—of the first

superior molars, which were extensively decayed, and at an age just previous to the eruption of the second molars. The quality of the teeth in general were poor, crowded, irregular and protruding. A few days afterward she returned accompanied by her father. The accomplished graduate had refused to extract the teeth, arguing that it would be much better to have them filled with gold at ten dollars a piece. Soon after this I saw the young dentist and was pompously informed that he had no difficulty whatever in saving that kind of teeth in his practice. His "practice" at that time amounted to less than one year's experience. Suffice it to say, to-day the second molars stand next to the second bicuspid, with hardly the appearance of teeth having been extracted. The mouth is much improved in appearance, and the position of the teeth is far more favorable for the prevention of decay.

Let me give you another leaf in the life of that young man. He was called upon to treat an alveolar abscess, and finding cotton at the end of a root canal—put in a number of years previous by one of our most skillful and experienced dentists—he displayed it before his patient in such a manner it led to the story being noised abroad that "Dr. — filled the bottom of cavities with cotton." He was either ignorant or purposely ignored the fact that for twenty years at least, a large proportion of the dental profession resorted to no other method for stopping the apical foramen of devitalized teeth; and in fact it is only in recent times that we have been taught to see the error of our ways—in this and many other particulars—by such men as our own Dr. Harlan.

I do not wish you to understand that this young dentist was different from most young graduates; in fact I have a high regard for his capabilities, and predict for him a prominent place in the dental profession, when time, experience and attrition will have enabled him to unload his head of that which "is not in it." I have given you these illustrations to show how easy it is for even you to make yourselves ridiculous in the opinion of those who are capable of estimating your real worth.

In the present stage of your development it is natural you should have a somewhat elevated opinion of your ability, and of the possibilities of the dental art. You will have an opportunity to examine the work of other dentists, and you will no doubt be surprised to find much which you will denominate failures from imperfect operations.

We ask you to reserve your opinion. It will not increase the confidence of your patient in dentistry or in yourselves. When time has given you an opportunity to examine much of your own work under like circumstances, you will begin to know some of the unconquerable phases of the enemy against which you at first so bravely charged and be far more generous and fair in your opinion of the skill of others.

We ask you to go forth with the determination to always do your very best, however trivial or difficult the task. Remember that nothing is worth doing at all that is not worth doing well.

No matter if it takes you much longer than the time other men claim to do the same operation, do your work well.

If you have thoughtlessly agreed to a certain price which you find is far below what the operation is worth, stick to it without a murmur and *do your work well*. Always bear in mind that "price" for a perfect dental operation is but a drop in the bucketful of future work which will be brought by its influence; whereas an imperfect operation at any price is immediate and future robbery of your patron and yourself. It not only robs you of future business but it robs you of the pleasure of honest success.

No man is truly successful in business who does not find his greatest pleasure in the perfection of his daily occupation.

If in the distant future you develop some special capacity which gives you prominence in the profession, let us hope you will not entirely lose your head in the exclusive contemplation and admiration of your own accomplishments. A careful, broad and liberal examination of the thoughts and work of others, will often be the means of discovering glaring imperfections in one's own structure, and point the way to opportunities for improvement and a still higher standard of advancement.

Modesty, generosity, perseverance and truthfulness are characteristics peculiar to all truly great men.

We ask you therefore, in this parting hour to be modest in your assumption of ability; generous in your estimation of others; determined in your efforts to do your work well; and last, but not least, we ask—aye, expect you to be honest.

When we have said that, we have said much if not all.

Honesty should enter into every human action; not because it is the best policy which will bring a reward, but because it is right, and in harmony with the universe, beating in unison with all

that tends in the development of character to a proud and kingly place among men. It is the well-spring of frankness, courtesy, sympathy and tenderness, and sends its beneficent influence into every thought and accomplishment of life. And to a dentist who must needs be implicitly trusted, it is an invaluable characteristic.

And now we bid you farewell as dental college students, but welcome as brothers and co-workers in the art and science of dentistry. With the assurance that we shall ever stand ready to aid you as we have in the past, we sincerely hope your future will be a bright and prosperous one.

WHY COPPER AMALGAM SOMETIMES WASTES IN THE MOUTH.*

BY W. B. AMES, D. D. S., CHICAGO.

Inasmuch as many of us have for several years been endeavoring to attain to some definite knowledge of the physical properties and peculiarities of amalgamated copper, and as my convictions, derived from an experience of ten years in the use, and four years in the manufacture of the material are somewhat at variance with those of some gentlemen who have written and spoken on the subject, I have concluded to bring it before this society for consideration.

The most serious short-coming that has been argued against copper amalgam as an offset to its many valuable characteristics, is the tendency in many cases to waste or cup out, and this has seemed to many to be a sufficiently serious objection to cause its abandonment, or to make it necessary to first make a test filling to discover whether the use of this material was warranted in the mouth of the patient in hand. My faith in the material has never been shattered, for the reason that although some of my most conscientious efforts in the making and use of it have resulted in more or less dismal failure, I have had the conviction that the difficulty was to be attributed to the faulty processes and methods of making and using, rather than to inseparable peculiarities. This conviction was supported by having used some time since a quantity of copper amalgam called Sullivan's, made for the Dental Manufacturing Co., London, which differs materially from the "Sullivan's"

* Read before the Mississippi Valley Dental Society.

furnished by Ash & Sons. This amalgam I found to stand in mouths in which all other preparations of the kind would waste to a greater or less extent, and furnished me the incentive to labor toward ascertaining the cause of the lack of stability of other copper amalgams. That the wasting was most serious in what is termed acid mouths, was not a very tangible clew to start upon, yet it was most natural to consider first what solvents of the constituents of copper amalgam we might naturally have within the mouth. It would be unreasonable to suppose that there was ever a condition of the saliva sufficiently acid to dissolve copper and mercury to the extent that we often see, unless the action was in some way intensified, as these metals are only soluble in nitric acid and the more powerful nitro-muriatic, unless the less energetic acids be used in connection with a galvanic couplet, *i. e.*, as the fluid of a battery of which one of these metals is the positive element, or as the electrolyte with one of the metals in question as the anode. In the case of copper there might be a very slight wasting from oxidation and sulphuretting of the surface; these compounds being either dissolved or worn from the surface so that there might be a continuous reformation, but in the case of the mercury which is the metal which is supposed to be presented upon the surface there could be no such wasting, as it does not oxidize under the conditions present and the sulphuret which is the compound formed in the cold state, would be a very tenacious and insoluble film. The black film which the fillings take on which do not show any evidence of wasting is undoubtedly the black sulphuret of mercury—that being the compound that is formed when mercury and sulphur are brought together in the cold state.

The only tangible clew to the solution of copper amalgam in the mouth seemed to be the fact that out of the mouth the galvanic current would cause the solution of its components in the weak acids and the phenomena observed in the mouth, in the more rapid wasting of those fillings which were so placed as to form the positive element of a battery, the negative element of which was an adjoining or occluding gold filling or crown.

Starting with this as a clew, it was natural to take notice of the fact that many of the copper amalgams when made at all dry, presented the appearance of being composed of copper amalgam and free copper, the surface showing in some specimens almost a copper color, and it was most natural to question whether or not this

free copper was the positive element and the amalgamated portion the negative element of a galvanic battery when placed in the fluids of some mouths. This would readily account for the entire phenomena, for it would be analogous to the solution of impure, unamalgamated zinc in dilute sulphuric acid where the same zinc with an amalgamated surface is not dissolved. Upon treating with a solution of mercurous nitrate, amalgams, containing free copper, it was found that the nature of the material was radically changed, a much more thorough amalgamation being brought about, and with it, much better results being obtained in the mouth.

Now what is the cause of this free copper in copper amalgam? With that of my own manufacture it was largely due to an extensive grinding of the amalgamated copper crystals in a mill devised for the purpose, with a view to giving it smoothness and a more desirable plasticity. It has been the general opinion, I think, that copper amalgam could not be triturated too extensively by the manufacturer or by the dentist at the time of using. In several published descriptions of methods of producing the material, great stress has been placed on the heating and rubbing down and repeating this until sufficient mercury had been worked out and smoothness obtained. On account of results observed in using amalgam made by myself by a large variety of processes, I decided some time since that all or any grinding was bad for the material, and that the only heat that it should have was that given to it by the dentist at the time of its preparation for the filling. When the amalgamation of the copper is obtained by precipitating it upon the surface of a mass of mercury by the use of electricity, as I originally made the material, the first crystallization takes place with a large surplus of mercury, so that heat is absolutely necessary to put it in marketable condition, and unless the copper has been precipitated in a uniformly fine state, the grinding must be resorted to, whereas, if the copper is precipitated upon some other than a mercury surface and the amalgamation of a proper quantity effected by the use of proper chemicals, the excess of mercury can be worked out and the material put into marketable condition without heat and without grinding. That heating, and especially repeated heating, is bad for copper amalgam where the very best results are required, is unquestionable, as the 250° F. that is required to break up the crystals and set mercury free, is sufficient to volatilize the mercury to a very appreciable extent, as can be seen by holding a

piece of gold over the amalgam during the process. While I do not consider careful heating to be as injurious as the extensive trituration that has been so generally advised, I think that it is well to use only fresh amalgam in such cases as we have reason to fear that wasting might take place.

With copper amalgam in which the copper precipitate has been carefully amalgamated, and the amalgamation has not been disturbed by heat or grinding, we have a material that will have permanence and stability in the most acid mouth.

Where a filling has wasted, it has in nearly all cases a surface to which fresh amalgam will readily attach, so that these fillings can be easily flushed out, and if this is done with an amalgam that has the proper stability, the filling is practically as good as if the wasting had not taken place.

CROWNS.*

BY DR. E. M. S. FERNANDEZ, CHICAGO, ILL.

I do not come before you this evening to attempt teaching how to make artificial dental crowns. Some years ago it might have been proper to do this, but at the present time there are so many good and practical methods on this kind of work that it is really difficult to know what to say.

I would, indeed, like to be able to give some return to all of you gentlemen who have so kindly and unselfishly contributed in the free advance of our difficult and hard-working profession, but alas ! I would fail were I to try.

I do not wish to read before you a paper written by me and corrected by others. I will simply give a few remarks written by myself and corrected by none.

In making and attaching artificial crowns to natural roots there are a few requisites, which seem to me very important to follow, and with them let each man work according to his own skill, and the difficulties that each case may present.

First of all the root to be crowned should be in as healthy a condition as possible.

A band should be fitted just loose enough to permit its removal without force, and it should answer for or take the place of an artificial enamel in its shape, thickness and depth underneath the

*Read before the Chicago Dental Society.

gum around its circumference and smoothness of surface. Care should be taken, nevertheless, to tighten the alveolar edge of the band by means of concaving pliers, when the work is all finished, just before it is cemented on.

An artificial crown should touch its adjacent teeth on both sides and at a point near its masticating edge or surface.

The articulation should be easy enough to let a strip of thin paper be drawn through. This will prevent an overpressure, as a crowned root invariably elongates.

The cusps of a gold crown should be thick, so as to permit grinding if it becomes necessary after a time.

When porcelain teeth are used in combination, the English teeth are preferable; they can be ground and polished without detriment. Also, if they are heated slowly, and allowed to cool gradually, they will not change color.

22 carat gold, 28 or 29 gauge, should be used for bands. Pure gold is very desirable for backings. It is best to back a tooth with pure gold. Flow 20 carat gold solder on it, and then regrind and proceed with the work. I prefer using 20 carat gold solder throughout all crown work.

In crown and bridge work, modelling compound is preferable for taking impressions. Equal parts of lake sand and plaster of Paris makes the best investment material I know of. It stands heat without cracking to pieces, and makes a hard model for articulating.

And last of all, gentlemen, take time to make a crown well, and you will save time by doing so.

PROCEEDINGS OF SOCIETIES.

THE DENTAL PROTECTIVE ASSOCIATION.

The second annual meeting of the Dental Protective Association of the United States, was held at the Grand Pacific Hotel, Chicago, December 16, 1890. The President, Dr. Crouse, called the meeting to order and spoke as follows :

Our second year closes full of encouragement. Last year at our first annual meeting we had represented in person and by proxy, 648 members. This, our second annual meeting, is represented by nearly 1,500 members, showing that the membership has more than doubled during the year.

We have driven the Tooth Crown Company from Milwaukee, where they had commenced suits against five members. Our attorneys entered a motion asking the court to set and limit the time when all the testimony should be presented by the Crown Company. After hearing the arguments of the counsel on both sides, the court limited the time to twenty days, and before it was up the Tooth Crown Company withdrew all the suits at their own cost. A similar move in Baltimore, where six of our members had been sued, and we had taken charge of their suits, caused the Crown Company to withdraw all these suits at their own cost. This demonstrates the correctness of what we have all along claimed, that the International Tooth Crown Company did not dare to enter into a fair contest as to the validity of their patents.

They have now commenced suits in New York, and answers will be filed in due time. We accept licensees on the same terms as others, and afford them the same protection, with the exception of a few licensees located in a very limited portion of the country.

The Dental Protective Association has been giving absolute protection to the entire dental profession, while thus far, less than one-tenth of the whole number has joined the association.

We want every member of the profession to unite with us. Ten dollars is but a trifle for each dentist to pay for the protection and benefits he receives. Think of 15,000 dentists in one association! Who can estimate the great good that such an organization can accomplish? Is it a dream? No! I expect to live to see it. It only depends on the amount of exertion the present 1,500 members put forth. Let every member during the year get three new members. It will be an easy way to treble our membership which, is the great work of the coming year.

We have saved the dental profession a million of dollars the past year, and better still, saved many of its members the humiliation of signing a license that robs a man of his manhood.

I want a committee appointed from this association to examine our books and methods of doing the work.

On motion, Drs. Gilmer, Fernandez and Ames, were selected.

The election of a Board of Directors resulted in J. N. Crouse, T. W. Brophy and E. D. Swain, being elected their own successors. After further routine work the meeting adjourned.

E. D. SWAIN, *Secretary*.

J. N. CROUSE, *President*.

REPORT OF COMMITTEE.

After a careful examination of the management and accounts of the Dental Protective Association of the United States for the year up to date, we have come to the conclusion that it is being managed carefully, economically, and with good judgment.

We know positively that the Chairman is giving to this work much thought and time, which is the same as money to him; that during the year he has attended several dental meetings in the interest of the Association; that he has devoted much time and labor to organizing the profession, and in attending to its litigation, and that he has done all this entirely at his own expense and without one dollar of cost to the Association.

The entire office expense of the Association for the year amounts to two hundred and forty dollars (\$240), and that for clerical help.

The Protective Association is saving hundreds of thousands of dollars annually to the profession, and we believe it to be the duty of every practicing dentist to assist its grand work by paying the membership fee and becoming identified with the Association.

It is certainly unjust that a few should bear the entire expense for the benefit of the whole profession, and it is demoralizing to those who quietly accept the fruit of this injustice.

We would further recommend that, as soon as the management think it advisable, after due notice to the profession, the books be closed, and the protection of the Association withheld from non-members.

THOS. L. GILMER,	} Committee.
E. M. S. FERNANDEZ,	
W. B. AMES,	

MISSISSIPPI VALLEY ASSOCIATION OF DENTAL SURGEONS.

(Held in Cincinnati, March 10, 11, 12—1891.)

FROM SHORT-HAND REPORT, BY F. W. SAGE, D. D. S.*

TUESDAY, MARCH TENTH.

On the opening of this, the 48th annual meeting of the association, the president, Dr. M. H. Fletcher, of Cincinnati, read an address of welcome, which was found as he further progressed, to deviate from the conventional details of a formal speech, cleverly introducing the subject of root treatment with arsenious acid. An abstract of this part of his speech is here given:

* Abstract of Papers read, and Report of Discussions.

ABSTRACT OF ADDRESS.

BY DR. M. H. FLETCHER, CINCINNATI, O.

* * * * * “The direction of greatest advancement of our profession, from the present time, will be in the line of prophylaxis. We believe, in view of recent discoveries in the science of bacteriology, that decay of the teeth will yet be prevented. Who will deny that such attainment will signalize the acme of dental science? But pending the all-important discovery, other work urgently demands our attention. A new filling-material for teeth is demanded, a filling that shall be at once indestructible, plastic, a non-conductor of thermal influences, and inimical by its presence, to germs. Who will find for us the pain-alleviator for sensitive dentine? Who will find us a plastic base for artificial teeth; something more presentable than rubber, more tractable and durable than celluloid, possessed of the more desirable quality of conductivity? * * * *

“Dr. W. D. Miller’s work has placed before us in the most practicable form that has yet been devised, the Etiology of Dental Caries. We know now what kinds of germs we have to deal with. Gases which breed bacteria must first be got rid of. For this purpose I use arsenious acid, or other powerful germicides. No lesions of the tissues of the body (not self-limiting) are so amenable to treatment, [as alveolar abscess.—*Reporter*.] This treatment should be short. Dr. Geo. Cunningham of Cambridge, Eng., gave us, three years ago, a paper describing a mode of treatment with arsenious acid, and adduced statistics showing the success he had attained through that method. His idea was to remove the cause and then employ an agent which would prevent its recurrence. He calls his method the ‘immediate method,’ in contradistinction to commonly employed routine medication which he calls the ‘dressing method.’”

Dr. Fletcher suggested an improvement of his own devising, on Dr. Cunningham’s formula for preparing arsenious acid for root filling. It is as follows :

Arsenious Acid, gr. ij.

Precipitated Chalk, ʒ i.

Glycerine, q. s. to make a thick paste.

“Arsenious acid,” he continued, “is only slightly soluble in water; it is somewhat more so in glycerine. My formula is more easily manipulated, and is less dangerous: First, on account of

the small quantity used. Second, because the quantity is easily measured by the eye, and being somewhat solid, is not liable to be forced through the foramen. The dose of the arsenic is from the $\frac{1}{20}$ to the $\frac{1}{10}$ of a grain. The stomach of the adult readily takes up this quantity. Now the $\frac{1}{40}$ of a grain is probably all that is applied in this use of the drug, and this is not in contact with soft tissue. Even should it be forced through the foramen its effect would only be beneficial; it would act destructively upon the pus, and would finally be absorbed by the blood, without bad effect. *

* * How to use the preparation: "One-half a grain of the mixture, equal in size to a half grain of wheat; mix with a single drop of water on a slab. Introduce into the canal, which should first be repeatedly washed with alcohol and thoroughly dried. Fill the canal perfectly with this compound. Then dry again, and in the majority of cases fill the tooth at once. Small roots may be left with the dressing in them for a few days. Of 148 cases in which I used this method of treatment, only two required the removal of the paste to relieve pain. The continual remaining of this germicide in the pulp canal is perfectly legitimate. Carbolic acid and other antiseptics used in the canals, sooner or later lose their effect. Nothing, in my experience, answers as well as arsenious acid. Fowler's solution is too weak, and it leaves no crystals of the salt in the root." * * *

DISCUSSION.

In order to place the subject in the most favorable light for intelligent discussion, Dr. Fletcher read, by special request, the second time, the part included in the above abstract. Dr. Frank W. Sage, of Cincinnati, also read at this time a paper entitled, "Phagocytosis in Dental Lesions," (given elsewhere), the object being to afford opportunity for a joint discussion of these two papers on kindred topics, after which Dr. J. Taft took the floor:

"The practice proposed in Dr. Fletcher's paper, of using arsenious acid for the purpose described, is one which should be well considered. In the light of former experiences in using this preparation for other purposes, we should proceed with extreme caution.

The older members of the profession, and even many of the younger, know that very objectionable and even injurious results have often followed the use of arsenic. It seemed, oftentimes, when used for the purpose of devitalizing pulps, to pass beyond the domain in which it was designed to operate, and affected injur-

iously other tissues. It will be remembered that in instances it not only destroyed the pulp but sometimes produced disease in parts beyond. In young persons especially—those under twenty-five years of age—this occurred. I have seen many cases of abscesses caused by its use. Some persons are far more susceptible to its influence than others. Some show evidence of its peculiar reaction if even the smallest quantity be used. The acid has even been used upon the margins of the gum in order to loosen teeth whose removal was desired. Directions for this use of arsenious acid will be found in some of the earlier writings of men in our profession. Probably a much larger amount of the drug was used than is suggested by Dr. Fletcher for his purposes. The practice is of course to be reprehended. Holding these facts in mind, we should allow no mere prejudice to operate against a fair trial of any well attested method of treatment. The statement that arsenious acid could be used to advantage in roots, was at one time received with incredulity. We cannot reasonably disbelieve statements made by men who have attained good results. I have for many years used little arsenious acid in devitalizing pulps. I am not prepared to say that for the purpose proposed in the paper, arsenious acid is not useful. There is no analogy, perhaps, in the use of this agent for the purpose named, and for destroying the life of a pulp. So far as being carried by the circulation into the tissues is concerned, its action would probably be very slight. One thought was suggested: that the stomach would probably appropriate a small amount of the poison without ill effect. That is not a criterion by which to judge of the action of this agent when introduced into the tissues.

The poison of many serpents can be taken with impunity into the stomach, which when directly introduced, perhaps in much smaller quantity, into the circulation works immediate destruction. My impression is that the mode of practice suggested is worthy of further experiment. Thorough preparatory cleansing should be insisted upon, in order to remove that upon which the germs thrive. A tooth hermetically sealed will probably exclude all germs—or at least will inhibit their propagation. Just why arsenious acid should seem to Dr. Fletcher a more effective agent than bichloride of mercury, I cannot quite understand. Perhaps he will explain. I have for years used salicylic acid—in crystals—for root-filling, in nearly all cases with success. Bichloride of mer-

cury has also been used successfully in my practice. I am, therefore, constrained to regard the use of arsenious acid for this purpose as only another method, having perhaps no exceptional merit.

DR. C. M. WRIGHT: Dr. Taft has very ably discussed the paper. I should like to ask this question: If the arsenious acid destroys the gas—or the bacteria themselves—how is it that Dr. Taft and the rest of us who have for so long observed the use of this agent, have got the idea that it will produce abscess? I remember years ago, at a meeting of dentists in Europe, an American dentist practicing in Stockholm, said that he never used arsenious acid unless he wanted to produce a crop of “gum-boils,” as he put it. How is it that when applied to the vital pulp it will not produce this same trouble? It seems to me that Dr. Fletcher would have succeeded quite as well if he had used no arsenic at all in the 148 cases he adduced. If he had left out of view the gas-producing agents, he would have had the same record.

DR. H. A. SMITH: I presume that this acid is used because it is a flesh-preserver. And yet who of us has not applied arsenic to the pulp and found it undergoing putrefaction? Will there not come a time when the action of the acid will fail? If the root is not filled it must absorb moisture. What prevents the putrefactive bacteria from entering the canal and producing putrefactive results? I do not doubt that he has reported his cases faithfully; but has sufficient time elapsed to establish his theory? You may recall that an eminent chemist—Mayr—ridiculed the idea that arsenious acid was a powerful antiseptic, or a flesh-preserver. He said that he had had a vial of this acid standing for some time uncorked on a shelf, and found spores growing upon the surface. May we not be mistaken in assuming that it is a potent, persistent and continually resistant agent in the root?

DR. FRANK HUNTER: Dr. Flagg made some experiments years ago, intending to test the question whether or not arsenic applied to a living pulp is capable of causing sloughing at the apex of the root, as some had claimed was liable to happen. As the result of many tests he found on cutting off the bulbous portion of the pulp, traces of arsenic, but the parts beyond and nearer the apex yielded no such traces. For my own part I incline to the opinion that arsenic destroys by irritation, and does not enter the circulation.

DR. C. P. GRAY: Inasmuch as Dr. W. D. Miller has said that the microbes are capable of penetrating the dentinal tubules, would

it not be better to use bichloride of mercury, as it is the most penetrating germicide we have? Dr. Fletcher states that his preparation of arsenic is almost insoluble; how then can it penetrate these tubules?

DR. FLETCHER: The essential point is that bichloride of mercury is so much more soluble in water that as a fluid it is apt to be altogether *too* effective, and may work injury. I consider arsenic a safer remedy. In reply to Dr. Smith I will simply say that it is well-known that arsenic is used in embalming. That fact first suggested to me its use for this purpose of root filling. In the special classes of cases in which I use it there would probably be a freer development of microbes but for the inhibitory action of the arsenious acid. I am not able to say what becomes of the acid finally, statistics however, show what is the result of the operation. I admit that the cleansing of the roots in the cases I have given, would possibly have been well enough, but I want something to prevent a return of irritation. This use of the acid is simply auxiliary. If you can fill every root-canal perfectly with something that is not saturated with a fluid, you do not need anything else. But I cannot always do that. I have adopted the use of this agent because after I have done the very best I can, I am still sure there are plenty of bacteria there to cause trouble later on. I go on the principle that the sooner you can get rid of the empty space in the root-canal, the sooner your abscess will get well. I take it for granted that any vessel will absorb the arsenic. If you rub the preparation upon your hand, you may poison yourself. But the apical foramen at the apex of a root is probably too minute to allow of this arsenical compound's passing, and even if it did pass it could do no harm, circulation in the parts having ceased.

I have never seen an abscess result from the use of arsenic. I have seen the tissues destroyed, but no abscess. I would like to know of such a case. My opinion is that through the injudicious use of arsenic the pericementum might be destroyed and the bone might remain for a long time unaffected.

DR. JUNKERMANN: It is a well-known fact that arsenic, to be effective as a germicide, must be in solution. You may rub dry arsenic upon a dry skin with impunity. Unless you expect to depend upon infiltration to make a solution of your arsenic-paste after your work has been done, you might as well fill the root with dry

chalk, for all the service it may be expected to do. The same might be said of salicylic acid.

Dr. FLETCHER: I fully agree with Dr. Junkermann that arsenic must be in solution. I do not consider the danger resulting from probable infiltration as of any particular moment, either. Nor do I think the arsenic in this semi-solid condition could penetrate the dentinal tubules, and thence penetrate the cementum far enough to act disastrously upon the pericementum and parts beyond. There is no possible way of communication.

Dr. WRIGHT: Is not this the point that Dr. Junkermann raises: that even a solution of arsenic is useless unless it is made to pass through the foramen?

Dr. JUNKERMANN: If the arsenic is inert—as I assert it is—in the solid form, what peculiar advantage do you hope to derive from using it?

Dr. TAFT: There may be more in this method than we are now able to conceive, after all. Arseniate of cobalt combined with charcoal finely pulverized, has been used in the same way without causing trouble.

Dr. WRIGHT: What you mean by “trouble,” is abscess with pus formation, is it?

Dr. TAFT: Yes, sir. Now with regard to the formation of abscess: [After the use of arsenic?—REP.] Years ago I applied arsenic to an aching pulp of a tooth in the mouth of a 13-year-old girl. The result was the production of enormous swelling and a distinctly defined abscess, within a few hours. * * * Then in employing any agent for its supposed germicidal virtues in filling roots, we need to consider the character of the germs—whether they are *aerobic* or *anaerobic*. That is, whether they depend upon oxygen for their existence, or not. If not, simply sealing the root hermetically, will render their further existence impossible.

A voice: How do you determine that point in advance of the operation?

Dr. DENNIS: It is a well-known fact that the French pastes used in the treatment of cancer contain a large per cent of arsenic, which is self-limiting in its action, when applied to a raw, inflamed surface.

Dr. FLETCHER: The object in using arsenic is this: Being only slightly soluble in water, and rather more so in glycerine, it must appear that it is capable of being forced into the minutest

root-openings; such as are with difficulty or not at all filled in attempting to use chloro-percha. I say there are many such canals. I try then to do the next best thing. I believe that if you can get this preparation of arsenic in there, it will last longer than anything—iodoform, salicylic acid—or any other medicament that has been suggested for the purpose. To be sure, the cases in which I have used it have not had a very long trial. The arsenic being a powerful escharotic, probably a very small portion would suffice to maintain the aseptic condition.

DR. WRIGHT: Can you recall from memory, what per cent of successes you had in 148 cases before you adopted this course of treatment?

DR. FLETCHER: I have no data to show. I had cases return to my hands. I used formerly to treat them again and again, and still again; now I find no necessity for these repeated treatments. My own time and patience, and that of my patrons, is spared under the new manner of treatment.

DR. F. W. SAGE: Years ago the manufacturers or suppliers of dental medicaments introduced preparations of iodine in glycerine, creasote and carbolic acid in glycerine, to be used for injecting fistulæ and abscesses. The glycerine probably prepared the way for the introduction of these medicaments, by virtue of its assisting them through narrow, tortuous channels. This experiment, cited from the *Scientific American*, shows a peculiar quality in glycerine. A strong steel vessel having in its bottom an opening almost inconceivably small, was filled with oil and subjected to powerful pressure, (directed by means of a closely-fitted piston, and exerted by means of a hydraulic press), without causing the oil to penetrate the opening. Upon adding to the oil a small quantity of glycerine, its character was so changed that it readily passed the opening.

Meeting adjourned.

(TO BE CONTINUED.)

THE DENTAL REVIEW.

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FOR PERMANENT ROOT FILLING.

In this issue of the DENTAL REVIEW will be found a portion of Dr. M. H. Fletcher's address to the Mississippi Valley Association of Dental Surgeons, in which he advocates the use of arsenic as a component of a root filling. His formula is as follows:

R Arsenious acid,	-	-	-	-	gr. ij
Prepared chalk,	-	-	-	-	3i
Glycerine, q. s. to make a stiff paste.					

One-half grain of this formula is placed on a slab and a drop of water added to render it more fluid, after which it is packed into the canal until the root is filled. The permanent filling is then introduced. In the case of small canals (buccal roots of superior or mesial roots of inferior molars we presume), the paste is allowed to remain for a few days before the final filling. We have not had time to look up all the references to old fashioned methods of canal filling, but the reader is referred to "Coleman's Dental Surgery," pages 171-2-3, for an explanation of the uses of arsenic as a permanent disinfectant in root canals. Dr. W. Herbst, we believe, has recommended a plan similar to the one Coleman practiced, and a number of gentlemen in England have practiced the leaving of arsenic under oxychloride fillings and even under a top cotton dressing beneath a copper amalgam filling. The question of filling roots has received a great deal of attention from nearly every writer of prominence during a period of fifty years, and from the number of articles still appearing from time to time, it would seem as though the subject was inexhaustible. There can be no doubt of

the innocuousness of small quantities of arsenic in one or two teeth in the mouth of a single individual, but suppose six or eight roots—molars for instance—had to be filled, how much arsenic would be stored up for a rainy day? Is arsenic a safeguard against putrefaction? Why do pulps of teeth decay where arsenic dressings are sealed in teeth with sandarac, mastic, gutta-percha and oxy-phosphate of zinc stoppings? Is it because the microbes which produce soluble ferments are too numerous in the cavity for a $\frac{1}{20}$ grain of arsenic to destroy, or is it because arsenic is not a good preservative, except in greater mass than can be safely placed and allowed to remain in a cavity in a tooth? What necessity exists for the introduction of an antiseptic in the cleaned, sterilized and dried root of a tooth? Is glycerine permanent or evanescent? At first sight we do not approve of this resurrection of a condemned method of root filling, for the following reasons:

First. Roots of teeth will not be filled mechanically by this method, which is a requisite to success.

Second. Arsenic will cause a slow disintegration of the organic matrix of the tooth which will result in discoloration of the crown.

Third. It will result in the leaving of fragments of the pulp in the roots, which will add to the discoloration by the destruction of the blood disks contained in the pulp. (This by careless operators.)

Fourth. The crown, enamel and dentine being deprived of the integral strength of the organic matrix will much sooner collapse than if no antiseptic substance were left in the root.

Fifth. By virtue of the glycerine (which will be dissipated by diffusion in a year or two) the arsenic will be conveyed to the cementum by osmosis and its vitality will be lowered, if not wholly destroyed and we will have a *necrosed* tooth.

Sixth. The root of a tooth should be filled with a substance which is not porous, which does not absorb moisture (water) or gases and it should fit the interstices and cling to the sides of a root and also be a moderately good conductor of heat and cold.

We have received from a prominent member of the profession, the following:

“I have manipulated some of the arsenic mixture and find that with water it mixes up into a very nice creamy paste, that of differing consistency can be worked into canals quite as easily and thoroughly as chloro-percha or most other materials used for the purpose, but, ye gods! I do not want to be handling as much

arsenic and as often as I would need to if I used this mixture for this purpose.

"I think that you had better attack the merit of the application, as the mixture is certainly a paste that would work very kindly in favorable and as kindly as anything else in unfavorable places, but I shudder as I think of the care necessary in its safe use. I think that his idea was to simply lute the walls of the canal with this but that does not change the merit of the method especially.

"Very sincerely, —————."

Appended hereto is a little mite of information about arsenic, the correctness of which can be verified by any who care to study the matter :

"Arsenious acid is unknown, and an aqueous solution of the oxide behaves toward alkalis as a very feeble salt-forming compound ; but *arsenic acid* is as strong an acid as phosphoric, their relative affinities are nearly equal." Watt's Dictionary of Chemistry —Morley and Muir, page 302, Vol. 1.

"Arsenious oxide, As_4O_6 , *dissolves* in alkalis, forming salts from which other arsenites may be obtained ; no hydrate of As_4O_6 , is however known. * * * Arsenic oxide As_2O_3 , dissolves in *water* with formation of the hydrate H_3AsO_4 , which crystallizes from concentrated solutions as $2\text{H}_3\text{AsO}_4 \cdot \text{H}_2\text{O}$; these crystals heated to 100° lose water and arsenic acid, H_3AsO_4 remains."

Arsenious oxide, As_4O_6 . The vitreous form according to Buchner, is soluble in 108 parts of cold water, while the opaque form requires 355 parts, the solubility of an ordinary piece is therefore doubtful, depending on the amount of change it has undergone. It is very soluble in *glycerine*, and is stated by Jackson to form *glyceryl arsenite*. Chemical News. Quoted in Thorpe's Applied Chemistry.

Two to three grains may prove fatal.

Arsenic oxide, As_2O_3 . It dissolves in six parts of cold, and two parts of hot water. Less poisonous than arsenious oxide.

Glycerin dissolves As_2O_3 easily when *heated*. Two and five one-hundredths grains has caused death. Solutions of the alkalis readily dissolve arsenious oxide. Bloxam. White arsenic, grain $\frac{1}{20}$. usual dose. Cumulative. Farquharson.

SUBSTANCES MODERATELY ANTISEPTIC.

Arsenious acid, efficient in the proportion $\frac{1}{166}$. "Reference Handbook of the Medical Sciences." "A 1 per cent solution of arsenious acid destroyed anthrax in *ten* days." Sternberg and Magnin.

DEFERRED MATTER.

If our friends will only have a little patience we hope to soon catch up on the publishing of some very interesting matter that has long been in our possession.

THE AMERICAN DENTAL ASSOCIATION.

By reason of the lateness of the announcement of the Executive committee, we were unable to give an extended notice of the meeting of this association in our last month's issue; but on the top of page of "Table of Contents" we published the time and place, so that our subscribers were informed of it. Saratoga Springs has been selected as the place of meeting, and the time the first Tuesday in August. It is hoped that all who can will be present, and make this meeting one of the red-letter events of 1891. Those who enjoyed the pleasures of the Western resort—Excelsior Springs—will be more than delighted with the location this year. To the tired worker, Saratoga Springs offers every opportunity for restoring lost energy, and to those in full vigor, every chance to distinguish themselves. Make your arrangements accordingly and be present with a good paper or something new and valuable to offer.

PRELIMINARY EXAMINATIONS FOR DENTAL STUDENTS.

Facts are stubborn things. The following list of words were sent to us by a teacher in a dental college, they are copied from the examination papers of students. Only the most common words are selected, technical terms and uncommon expressions and words, being beyond the possibility of reproduction. Suffice it to say that the writers of these phonetic words, within less than a twelvemonth, will have entered the ranks of our profession. We publish the list without further comment:

CORRECT SPELL- ING.	AS WRITTEN BY STUDENTS.	CORRECT SPELL- ING.	AS WRITTEN BY STUDENTS.
Alkaline,	alcolin, alklin, alcaline, alcoline.	Maltose,	maltus, maltoes.
Addition.	adition.	Mouth,	maut.
Arteries,	artries.	Oxygen,	oxigen.
Auricle,	oracal.	Osmosis,	osthmiosis.
Bolus,	bolis.	Cesophagus,	oesophis.

Beyond,	bhond.	Opalescent,	opolesent.
Capillary,	cappillary, capilarus, cappalary, cappillary, capallary.	Odorless,	oderless.
Cells,	sells.	Palatable,	palateable.
Condition,	condision.	Prepare.	prepair.
Carbo-hydrates,	carbo-hydratis.	Ptyalin,	tyaline, ptylin, tylin.
Chemical,	cemical, chemicaly.	Pulmonary,	pulmanary.
Curdle, curdling,	curdly, curdeling, kerdeling.	Proteid,	protaid.
Control,	controllation.	Porous,	porus.
Certain,	sertan.	Peptone,	petone.
Diffusion,	deffusion.	Physical,	phusical.
Emulsify,	emulcifie, elmon-sifes, mulsy.	Respiratory,	resparative.
Elasticity,	elasticity.	Richer,	risher.
Exhale,	exhaile.	Saliva,	salivia, salliva, salive, siliva, salava, salvia.
Expansive,	expancive.	Sugar,	shugar.
Epithelium,	epethelian.	Swallow,	swollue, swolly, swallow.
Easier,	easer.	Surface,	surfass.
Easily,	easily.	System,	cystem.
Ferment,	firmint.	Serum,	cerum.
Grape-sugar,	grapsugar.	Systole,	systol.
Gas,	gass.	Stomach,	stomac.
Glucose,	glucous.	Throat,	throate.
Heart,	hart.	Together,	togeather.
Inhale,	inhaile.	Vesicle,	vassicle.
Lungs,	longs, lungus.	Venous,	venus, veinus.
Lining,	lineing.	Vessels,	vessles.
Lubricate,	luberate.	Veins,	vains.
Moving,	mooving.	Ventricle,	ventracal.
Mucine,	musine.	Viscid,	vicid, visid.
Moisten,	moistin, moisen, moiste.	Watery,	wattery.
Mucus,	mucose.	Waste,	waiste.

THE PROPOSED NEW DENTAL LAW.

There seems to be a mistaken idea on the part of some members of the profession as to the real purport of the new law. The impression prevails in some quarters that the law designates that all licensees must submit to examination whether they have previously been engaged in practice in this State or not. This is a mistaken interpretation. The law does not propose to interfere with the right to practice of any man already registered. This manifestly would be an injustice to the old practitioners, and we believe it to be the sentiment of the promoters of the law to work a hardship on none.

Another objection urged by some is the annual registration fee of fifty cents. We are surprised that any one should object to this. Under present conditions it is almost impossible for the secretary of the State Board to keep an accurate list of legal practitioners with their addresses. If there were an annual registration fee the list could easily be kept complete, and it is certainly worth fifty cents to each practitioner to always have a reliable list of the practitioners in the State with their proper addresses. And even this small fee from each dentist will help the Board to enforce the law.

Our present law certainly is inadequate to keep out unqualified practitioners, and the new one has been framed by men long conversant with the needs of the profession in this State. We heartily commend it to the careful consideration of the profession.

An article copied from the press, in the DENTAL REVIEW, March, page 206, may have led to a wrong interpretation of the law through its inexactness, and if so we are glad to set the matter right.

C. N. J.

THE NEWBERRY LIBRARY.

At the March meeting of the Chicago Dental Society, it was decided to present the library of the society to the Newberry Library trustees, they having signified their intention of establishing a dental reference library that shall be the best equipped in the world. The building will be thoroughly fire-proof, so that valuable works, which if destroyed could not be replaced, will here be guarded with the greatest care. All publications obtainable will be procured, and a special fund created for the purchase of the latest works. The trustees will ask the appointment of a committee from the various societies to aid them in their selection of addi-

tions to this department. A special plea is made to the profession at large to send anything pertaining to the literature of the profession. Pamphlets, old journals, printed essays—be it only a single leaf, and they will be properly catalogued and preserved.

At present such matter may be sent to Drs. Cushing or Swain, and it will be forwarded by them to the proper authorities. The medical societies of this city have already donated their libraries to this institution which is destined to become one of the best scientific libraries of the age, as soon as completed.

It will be open to all the profession. Separate rooms for study with all the necessary material at hand cannot but prove a great attraction to the earnest seekers after knowledge.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

To the Editor of the Dental Review :

DEAR SIR : March has a reputation for fitfulness of climatic conditions. It has not lacked in this respect. With gusty breezes filled with dirt from the streets of New York, sponge-like fogs saturated with a mixed moisture and a varying temperature from the arctics to the tropics, we have pulled through without a large attention of "la grippe." It being young in this country it has caught the spirit of the age and gone West. May it so spend its energies on the boundless country of the prairies. If it has a *good* purpose, let us pray that it may die young. We have got on a good Easter scent for these occasional warm days, but as yet we have not been able to *borrow* it for any certain time, for everything is *lent*. So we have caught on all we could, even if it may seem a little March-like, it proves we are marching on. All these things are suggestive of better things ahead—new life, higher purposes. What an age for hopefulness, and we are disposed to climb up as much as we may, for we live by hope. "Even dentists hope." So Dr. Bogue said this month. He flits back and forth from Paris to New York in a quiet manner, and as quietly pops in at the meetings, and propounds sometimes (naught)y questions. It is a rare talent to be able to ask wise questions. It is a good habit to learn to become a good listener. It is profitable to excel in something that is of use in the world.

Any society that is fortunate enough to have a paper from Dr. S. B. Palmer, of Syracuse, is sure to have one of profit. The First District Society had such a privilege at its March meeting. Subject, "Zinc Fillings." "It was a very exhaustive article," as the term goes. While it was lengthy, it was not tiresome.

He fully showed by his reasonings that the principal mischief to zinc or phosphate fillings, was manifested at the gum line, and that it was due to the change of potentialities in this territory.

He took all his illustrations from Nature, going through to the end of his paper, proving that the dilemma rested in the changes that must more or less occur in the mouth. If we could keep the territories associated with our work in a state of nature, our difficulties would be reduced to a minimum.

At the end of the brief discussion that followed, Dr. Bogue (a peculiarity of his is raising a point sometimes by asking a question) propounded a question which brought a decidedly strong and intelligent reply, which in our opinion made a bull's-eye shot. All should grasp the lesson which was taught.

"Dr. Bogue," said Dr. Palmer, "your reasoning brings us to this helpless position. It seems to prove that we cannot hope (and all dentists are disposed to hope), we must not expect to bring out any results in the zinc filling material that will only in a limited sense meet these disturbances of potentialities, and hence they must go on wasting at these points at the gum line." "Well, Dr. Palmer said, "I have given the chemical facts," and he used this illustration in his last argument.

The initiatory step in the beginning of Riggs' disease is the action of acrid secretion with lime salts, making the deposits to a varying degree even on to the end of the root, which cases we are more or less familiar with. This is enough to make our point, which is emphasizing the value of intelligent attention in the *incipiency* of this insidious disorder. There are more troubles couched in this gum line than has been dreamed of. More anon.

Dr. Ottolengui raised some points of difference relative to the action of acids in connection with abrasion and erosion. As we are not quite clear in our mind on the point, we will refer our readers to his reflections in the *Dental Mirror*. It is only a dollar a year and a very readable journal, the doctor being the editor, he is putting his best foot into every issue. His editorial in the February number on "Independent Journalism," is carrying the medi-

cine to the disease, and ought to make every thinking reader feel better for the dose.

New Jersey was well represented at the First District meeting ; also Brooklyn and Connecticut ; the latter by Dr. Gaylord, of New Haven. Every one who has ever met him will not forget his joyous countenance. He is one of those fellows that should frequently visit sore-head dentists who are keeping a bone in their throats continually, and making wry faces over some imaginary sore-head experience. Dr. Walker wants all these fellows "mind-cured" before '93. He says things are just bubbling with harmony outside of New York. New York will be "all right" after the May meeting of the State society at Albany. No flies any more ; everybody is invited "and don't you forget it." May 13 and 14. Miller, Shepard, Pierce and Kirk, a rare symposer.

According to the report of the Executive Committee of the First District Society at its March meeting, they proposed in view of its revision of the by-laws to make it expensive, to bring charges of violation of the code of ethics, for it is reported in reference to this that a member preferring charges must deposit \$30 for expenses which may be incurred. We think this will keep in check any hasty movements in this direction.

The clinics had interesting features with eighty on-lookers who made it quite chatty and lively. The social feature is not a small consideration.

Dr. George S. Allan's actions spoke louder than words in that two and a half hour operation on a lower molar with a large waste of the distal surface and also of the grinding. The base of the filling was placed by hand pressure, and the remainder by Dr. S. G. Perry's improved mechanical mallet operated by electricity ; the foil was of a light number, and what will please the genial Doctor's friends is he really made a contour filling of the character he so forcibly advocated in that exhaustive article a year ago, and none of his listeners found it out. Well, one who can make so good a contour filling as he did, must believe in them, so we've got him on the list.

Dr. Horace Dean, of Jersey City, demonstrated his methods of taking impressions by making a cup for each case and so managed that the parts of the mouth which are needed are more definitely gotten, and this by taking the impression of the tissues in their actual condition and position of rest, thereby claiming to secure a

better fitting apparatus and one which will surpass anything that can be secured by any common methods which make the plate "suck up."

Dr. C. M. Richmond, of New York, gave a satisfactory demonstration of his apparatus for removing sensitive dentine. He excavated two deep seated decays with comfort, the patient being a dentist, and they know. These fillings were made by a new formula of aluminium amalgam placed in a hardened condition at once by the use of heated instruments, and the fillings were finished by a good knuckle, taking a fine polish.

Dr. Rynear exhibited the use of two new forms of pliers used for crimping the neck of gold crowns, and making a knuckle; one of these pliers was the invention of a Dr. Reynolds, (somewhere in the West,) one might as well say somewhere in the world, as out West is such a big place.

Dr. Kimball, of New York, explained the benefit of several dental appliances, one a lip-holder and also for the protection of the lower teeth with a soft rubber pad; improved disks of grit paper; also boxes for carrying medicated cotton pellets which are objects of value to many operators.

W. H. Schieffelin & Co., druggists of New York, distributed samples of the new iodine compound, Aristol; this is recommended as a valuable medicament in the treatment of diseased pulps and pulpless teeth. I think Prof. Harlan has called attention to this article.

We met a visiting dentist from London, Dr. Comer, an American; we are told he is a good operator, and is one of the few who pursue the American methods, i. e., placing all fillings according to the necessary requirements of the case in hand, ignoring the uniform English fee—a guinea—and making fees commensurate with the skill employed and the time needed. Dr. Comer makes his fees for placing fillings at three guineas per hour; crown and bridge work by contract mostly, preferring that his clientele should know the basis on which he makes his fees. We are disposed to think this a more rational practice. It is much thought that large fees are received in New York, larger than elsewhere; while it may be true to some extent, yet not so generally as many are inclined to judge.

It is doubtless true that those who are receiving the largest incomes get them more of the many patients at small fees and short

appointments having an average of twenty patients a day; with this include the work of an assistant, and with the additional income of plate-work, making a charge of two or three dollars for each appointment, it will readily be seen that a good round sum will be the aggregate for the entire year.

The men who get the largest fees based upon the time and skill required seem not to average a half a dozen patients daily.

There is a very important feature overlooked too often by both patients and dentists. The practitioner may make his fee at four dollars an hour, and he will often be dearer than that one who charges ten or fifteen dollars. The latter by his larger liberality of doing things often with an assistant at the chair and with quicker movements will accomplish enough more so as to make him the most profitable practitioner of the two.

We are told that the largest fee gotten in New York for one person for putting a mouth in order, and bill paid, was \$1,500. This service was rendered some twenty years since, and proves to-day its value being mostly contour work of an extensive character, with teeth shoulder to shoulder. We know of the aggregate being paid for a series of services for a family to the amount of \$2,850. We saw this bill paid, and cheerfully. Here is the other extreme. A dentist being asked, "Doctor, how much is your largest fee for one person?" Well, I sometimes get as high as \$35.

In our February letter we mentioned that Dr. Dwinelle had been quite indisposed, and made note of his recuperative ability—Richard's himself again. At the opening of the March meeting of the Odontological Society, the name of Dr. Wright got into the minutes, and Dr. Brockway corrected it to Wight. The press said, "Wight would be Wright;" of course applause followed—and the gavel fell.

A paper by the president on contour fillings followed, and showed conclusively that he had been advocating contour fillings forty years ago. Those old journals do keep facts alive. The Doctor wins his spurs on these credentials. He closed by saying, "Always follow nature when it is practicable, and gentlemen, when you find it practical, *do it*." The feeling is, had Dr. Allport contented himself in doing as well, in his late unpleasantness, he would have pleased his friends not only in New York but all over, for Dr. Allport has many friends. His ability has been of no common order and this "correspondence," dragged into his discussion, makes a

blot on his escutcheon. It hurts Dr. Allport and does not weigh a feather's weight against the noble Webb, for no fair-minded person will believe the charge made.

Dr. Brockway related an incident of office practice—an intelligent lady patient of his called and spoke of a galvanic effect noticed in her mouth. He could find nothing to confirm it beyond two small obscure cavities, which he filled, whereupon the trouble vanished; it being the impression by what he added, that he did not find evidences of such effects in the mouth, as often claimed. Dr. S. G. Perry took exceptions; he thought such effects did occur often and more likely under some conditions than others. Well, Dr. B. said he believed like Artemas Ward—"most likely seldom."

We do not think there is any doubt about galvanic effects occurring. We think it is conceded that a gold filling occluding upon an alloy filling will produce a decidedly unpleasant feeling and will get a thrill decidedly uncomfortable if the pulp be living. Two marked cases have occurred under our observation—a lady patient of ours went to a neighboring dentist and got a large alloy filling thinking it might be the cheaper than to come to us and get a gold filling—that would occlude with the one we made formerly above. During the dinner hour she suddenly sprang up from the table and put her hand to her face, and upon being asked what troubled her, she tried to explain but in the effort of talking lightning struck in many places, and it threw her into nervous spasms; after a little an examination was made by one of the guests as to the location of the disturbance and he instantly recognized the cause of the dilemma. He pointed out the contact of opposing metals—a piece of cloth was placed between the teeth so they could not come together—in this way thinking it would wear off, which it did after days of discomfort, when the face took on undue proportions she came to us and told her story. We opened the tooth from the buccal portion "a la Maynard" which we often do when indicated by dead pulps, we found a very odorous condition. After the surgical attention required at that sitting we closed the tooth and told the patient to return the next day if there was any disturbance. The patient left cheerfully, a clean \$20 bill for our skill and made this remark, "I always feel willing to pay for surgery." She returned the following day saying that there was a little uneasiness during the night. I found a slight infiltration of the gum tissue but informed her that all would be well.

That occurred four years ago last February and no trouble has returned. A case in our own mouth will be instructive. We wore a gold plate for many years for a lost incisor and second bicuspid; adjoining the latter we had a broad faced alloy filling quite superficial; occasionally we would notice twinges but more and more it continued to annoy, so much so, not infrequently we were obliged to stop our eating at the table and get up in an undignified manner. This occurring at a time when the late Dr. Walker, of New Orleans, was a guest, we called his attention to it and he decided if we would have the alloy filling removed, our trouble would disappear. He removed the filling and placed a gold one and the trouble was removed. Facts are stubborn things. It is much the fashion to confirm during Lent, so Dr. Heitzman took a hand in this line to the edification of those in attendance at the Odontological Society, at the March meeting. This time his particular theory of the protoplasm reticulum came in for attention.

Those who have their thoughts on such subjects manifested an interest by being able to do something in discussions. There has been a decided diffusion of thought and hence a much larger interest in the subjects of histology, embryology and microscopy, which has been an outgrowth because of his teachings. Dr. Heitzman produced testimony from noted and accepted authorities confirming his views; one was Stricker of Germany—truth will prevail.

Dr. Pierce, of Philadelphia, and Dr. Andrews, of Cambridge, were expected to have been present, but did not appear. A telegram was received by Dr. Perry from Dr. Andrews, saying that he was caught by the grippe and regretted his necessary absence. Dr. Andrews is New England's brightest representative in microscopy, and a fair and gentlemanly contestant in scientific debate. It is quite difficult for most men to keep out of polemical discussions, which have no legitimate place in science.

Dr. Jones and Son, of Northampton, Mass., were visitors at the meeting. Dr. Jones is another cultured gentlemanly Yankee dentist, and a very pleasant person to meet. We have known him many years and owe him much respect.

Dr. George Allan was notably absent from this meeting.

Rumor says the Boedecker fund and club project is off; we will hear more of this later.

On our way up town we stepped in (by special invitation) to Dr. Parmley Brown's to see an operation finished of a bridge, in-

cluding the superior centrals to replace the crown operations done by him nearly five years since, the patient having recently met with an accident falling down stairs. The roots of two centrals proved now to be quite necrosed. Dr. Brown has placed two porcelain roots into the sockets and made a porcelain bridge; by this he believes he will prevent the recession of gum tissue. They had been in their place three days and are putting on a very favorable appearance. It is altogether a very artistic piece of work: the patient is a lady of wealth and culture belonging not far from Chicago. Dr. Brown trusts this will prove one of the attractions in '93; by that time it will be tested.

We found some thirty Brooklynites gathered at their former place of meeting; they looked hungry for they have gone back on their \$1 dinner prior to the meeting. Their caterer was not up to the Jersey man. The Jersey dentists do have an unusually fine cuisine; it does one good to go from New York, everything is made so inviting, nothing mean about it and all goes so wide-awake, and lovingly all are full of the same spirit (only one kind). Jersey sets a good example—they just fill up and stop, and then they discuss and if they differ they are so gracious. The only fractious element is Levy. He will persist in smoking out of order. If he is called to order he gets off a chestnut, they all have a good laugh and the discussions go on nicely.

Richmond Lenox, M. D. read a paper on Ocular Disturbances from Dental Lesions. It was a smooth and scholarly production although there were many technical terms unfamiliar to the mass of dentists. It made a profitable paper calling out a more familiar thought regarding the disturbances that are attributed to the teeth in connection with the eyes. The more dentists exchange thoughts on these subjects the better it will be for them all. General remarks by Drs. Will Johnson, Wilder, Ottolengui, Atkinson, and Jarvie noting the value of such a paper by studying it and bringing it out more familiarly in a practical way. The thought was that pulp-stones and the depositions of secondary dentine had been noticed to bring about severe pains in various portions of the face; also inflamed pulps occasioned by irritating fillings under which have been discovered a slight exposure and an exuding of a drop of pus. These were brought to the notice of the meeting as additional disturbances, in connection with those noticed by the essayist with alveolar abscess. Dr. Atkinson emphasized the importance

of keeping the nutrient condition as well established as possible as a decided preventive of inflaming action by localization. Dr. Kimball, of New York, read a short and profitable paper on the value of air to the dentist in connection with his habits of life out-of-doors and in walking, and proper breathing through the nose instead of through the open mouth; good ventilation in sleeping apartment, a cool room. It was full of good suggestions of profit which were heartily accepted by all as very timely. All these subjects presented at various convenings cannot fail to be of value to practitioners in some direction, and we often wonder that so little interest is manifested, by the infrequent attendance of many, that have become known by outsiders from their names having been so long in association with societies. Those that continue in the race win, and they are most likely to keep their grip on the best things in practice. I called on a once very ardent disciple of practice; he had got tired after years of activity. He said, "I can't put in gold as I used to do, but, I can put in a pretty fair amalgam filling." Action is the law of life.

In a recent number of the REVIEW request was made that sample copies of bill heads be sent in that it might be determined what the custom was among dentists. We have not seen any further reference to the matter. We query whether after what was said by the editor regarding "professional bill-heads" there may not have been a scarcity of the latter. This subject may at first glance be deemed of small import by the mass of readers yet we think it can be used to evidence the progress in professional advance. No little is being said of professional advancement and liberality and freedom from trade spirit et cetera. Some of it does without doubt have a legitimate hold upon the thought that is guiding little by little the direction of professional accomplishments. We do not hesitate to assert it as our conviction that the most professional method of making out a bill is simply for "professional services." We think the itemized bills are not in good taste with those who make claim that we have attained in some degree professional standing. Of course this practice will not be expected to find favor only by those who are advocates of such position. We do not think it any marked prophecy to predict that whoever lives another quarter century will see professional services simply upon the bills of the general practitioner. We are quite sure that at the present time that not three per cent of practitioners, put it uniformly into practice. We are

impressed to say this from a large knowledge of the general custom in this part of the country.

It might be a surprise to many to know that not a few of our best known men itemize their bills in the minutest details. Not six months since one of the best known practitioners—in name—exhibited a bill to a brother dentist, the amount being several hundred dollars and it was so full of detail that it was fully twelve inches in length, looking more like a bill for groceries. This is only one of many instances that could be named right here in New York City where it is supposed that the highest elevations are attained. There is no real cause for men, that can command such compensation as these itemized bills aggregate, contributing to this undignified practice. Does undignified sound a little emphatic? If so we think it rightly used. It is doubtless true many may think that they cannot break away from the long established rule. But is there not enough to be gained worthy of there being some uniform action certainly among men who are organized for advanced practice, our societies are being more and more brought in contact with medical men by their contributions. We think this timely and profitable. This is continually a reminder to us that we have some things of value to learn from them and we make this a point as one that is important. Let societies resolve to do away with itemized bills. It will rid them of a decided touch of the tradesman which now so heavily hangs upon us; making us look too much like the sellers of merchandise. It is a difficult move for single individuals where so many are united against them.

While there are a few that do already carry out this plan simply giving a bill "for professional services," these few do not encounter much opposition. They have requests sometimes for itemized bills, an explanation showing that a record has been kept, of such a character in detail that it would be of little value to one uneducated to their real usefulness. To be sure this can be seen as a matter of reference, further than that it is of no value to the patient. In some manner most have a plan of recording stoppings, but this is a small part of service rendered in the advanced practice of to-day. To be able to give a patient an itemized statement in the way the most educated practitioners are practicing, to do this, it would be voluminous in many cases. Imagine the details of a case that would require a month or two to render the service that is demanded for putting the mouth in order. The

legitimate services demanded in a large proportion of adult mouths, requires more service by far to get the teeth and their associate parts in such condition, that the more common service of placing fillings can be done with anything like a reasonable prospect of success in the ultimate salvation of the teeth. For instance, we repeat a former transposition; what does it profit to save the crowns of many teeth and lose their sockets? There are thousands of such cases that are going the customary rounds to the dentist. "This always going to the dentist," and refilling, patching patch upon patch, utterly regardless of the greater necessity—the first securing something like a reasonable degree of health, both for the bettered condition for the bodily health and for sick teeth. Sick teeth in a sick body, calls for more ability than for filling teeth. Hence, sickness cannot be cared for by the job. Will practitioners of "dentistry" that travel on the "M. D.," start a new deal in this direction? It will do much to make us appear, at least, more like a "liberal profession."

Twenty-one years marks more changes in some than in others. We met Dr. Carpenter the first time in 1870. He was then introducing the Green Pneumatic Engine which for the first thing in that line was a buzzer, yet very effectual. Well, how is it now? It would be hard to tell who has the lead in engines because of so many individual tastes, and yet there are those right among us who turn their faces against them, and the rubber dam also. Dr. Carpenter, with all his brightness as an operator, comes to New York, as the little Baltimore boy said, "to get his teeth mended." The Doctor, although now a dairyman dentist in the famed city of the Northwest—Helena—does not go back to his adopted city, Chicago, where he has a choice nucleus of friends that believe in him. He don't grow old a bit. [Dr. Carpenter's demise occurred since the writing of this letter.—ED.]

The REVIEW goes it one better each month. The memoranda are of much interest for the February number. Aluminium seems to be on the up grade, it has a prospect of being cheaper than dirt, according to the information found in this memorandum. If it is true, two Connecticut men at Ansonia have struck a bonanza in the discovery for uniting the metal by welding. There is also a claim for an aluminium amalgam in New York. Dr. Clowes is the head center in this line—amalgams. This reminds us that he is expected to give a clinic in April; thousands know him by repute

as an amalgamator. Probably no one living has done so much painstaking work in this department. Every one that is interested in this practice should give him a call while visiting New York. He is one of the most genial of men—Fifth avenue, right facing the Vanderbilts. It costs big money to live in this neighborhood, but it pays, so Parmley Brown says. He is a young comer and flushy chap. He found a few difficulties when he first landed in Fifth avenue but he is bridging them over as they present themselves. Whatever one may think of Dr. Brown for figurative oratory he is a hard man to beat with his fingers. We have lately seen some of his practical bridge work, and although we were at first somewhat skeptical, we do think, for artisticness and cleanliness and strength as placed in the mouth by him, it excels anything we have met. It requires a skilled master to make it a success. Does it not in all departments? Every man to his own work, in that he can excel. What is needed is the stimulation of a laudable ambition. We think there are those among us that are aiming higher. Let us give them our generous attention.

Genesis of contour operations. You will notice that all the ardent advocates fall back upon "nature." We will not wonder if these illustrations from the Garden of Eden were where Kingsley took his ideal of his "Pivot Crowns" from; Hurd says he was there. These things will stir our genial Dwinelle for he only goes back to 1853. This strikes many strangely that Dr. Allan should carry such a subject to a medical association. We have a New England dental friend who scarcely ever meets us but he asks, "Well, are you contouring as much as you used to?"

Heitzman looked all about the Odontological Society for Dr. Allan when he was producing his testimony for confirming his reticulum theory. He paused in his readings and remarked that "some gentlemen could learn some things to their advantage if they were here."

It is a little singular that all Heitzman's combatants were absent, but he is "monarch of all he surveys" all the same. He announced a new star in the galaxy, Dr. John Hart, of New York. He is bright and will certainly have something worth listening to, will put his whole H(e)art in it. New York is all on tip-toe for coming events in May at the State meeting at Albany. The biggest thing out. There are some several hoping that the walking will be good

for they want to go. It has been a hard winter, small grip(pe) on practice.

The ethical waters are stirred, were stirred at a recent meeting of the Gotham doctors. We append "What the doctors are saying." It may give a hint to dentists so that when they come to be "Doctors" it may be of use. As yet, among them, there is an undigested lump which will not swallow without some slime.

For the first time in the local history of medicine some of the New York physicians who don't admire the code of professional ethics got a good chance last night to publicly sit upon that mossy antique, and pronounce it a useless incumbrance. The opportunity came up at the monthly meeting of the County Medical Society, where members were handling the burning question of the newspapers, some with gloves and some otherwise. They called it a discussion on the question "Under What Circumstances and to What Extent May Members of the Medical Profession Properly Permit Their Names and Opinions to be Published by the Secular Press?" But the gist of that long rambling text was the newspapers, and the interview and the interviewer bore the brunt of the affray. It appeared to a majority of the speakers that the interviewer was a pretty good fellow and the truthful interview was not a bad thing in its proper place, but a strong majority argued with some emphasis, apparently, in favor of the extinction of both.

The meeting was held in the handsome new Academy of Medicine building, No. 17 East Forty-third street, and two or three hundred doctors, among them some of the most prominent in the city, attended. It is the custom of the society at these meetings for some one to read a paper on a topic of interest, and then six or seven members discuss it, after which the reader of the paper closes with a short address. Dr. Fred. Sturgis read a paper last night and there wasn't much difficulty in finding out what he thought about the much maligned reporter and the alleged duty of doctors not to talk to him. He thought it was bosh—not in so many words, but that was the sense of it. He read the section of the code forbidding the dissemination of knowledge, "through the medium of reporters or interviewers," and thought it was exceedingly difficult to enforce and might as well be abolished.

Ex.

REVIEWS AND ABSTRACTS.

COPY OF THE PROPOSED DENTAL LAW, INTRODUCED FOR PASSAGE BEFORE THE ILLINOIS LEGISLATURE.

37TH ASSEMBLY. HOUSE NO. 369. FEBRUARY, 1891.

Introduced by Mr. Griggs, February 12, 1891. Read by title February 12, 1891, ordered printed and referred to the Committee on Judiciary.

A BILL

For an act to amend sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 of an act entitled "An act to insure the better education of practitioners of dental surgery, and to regulate the practice of dentistry in the State of Illinois," approved May 30, 1881, in force July 1, 1881.

SECTION 1. *Be it enacted by the people of the State of Illinois, represented in the General Assembly,* That sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 of an act entitled "An act to insure the better education of practitioners of dental surgery and to regulate the practice of dentistry in the State of Illinois," approved May, 30, 1881, in force July 1, 1881, be and the same are hereby amended so as to read as follows:

SECTION 1. *Be it enacted by the people of the State of Illinois, represented in the General Assembly,* That it shall be unlawful for any person who is not at the time of the passage of this act, a legal practitioner of dental surgery in this State as shown by the books of the State Board of Dental Examiners, created under the provisions of an act entitled, "An act to insure the better education of practitioners of dental surgery, and to regulate the practice of dentistry in the State of Illinois," approved May 30, 1881, in force July 1, 1881, to practice or attempt to practice dentistry in this State, unless such person shall have received a license so to practice from the State Board of Dental Examiners, as hereinafter provided.

SEC. 2. The Board of Dental Examiners created by an act entitled "An act to ensure the better education of practitioners of dental surgery and to regulate the practice of dentistry in the State of Illinois," approved May 30, 1881, in force July 1, 1881, is hereby continued, and the members thereof heretofore appointed shall hold their offices until the close of the respective terms. Their successors shall be appointed by the Governor annually, for the

term of five years and he shall also fill any vacancy in said board. All such appointments shall be of practicing dentists, and no person who shall be in any manner pecuniarily interested in, or officially connected with any dental college, or dental department of any school or university, shall be appointed a member of said board, and not more than three of the members appointed as herein provided shall belong to the same political party.

SEC. 3. The duties of said board shall be to carry into effect the purposes and enforce the provisions of this act. It shall have power to make reasonable rules and regulations for this purpose. It shall annually choose one of its members president, and one the secretary thereof, and shall hold regular meetings at least twice in each year, and such other meetings and at such places as it may by its rules provide. It shall be the duty of the board to examine all applicants for registration, to grant licenses to practice dentistry to such persons as may be entitled to the same under the provisions of this act, and to cause the prosecution of all persons violating its provisions. The board shall keep full records of its proceedings and of its receipts and disbursements, and a full and accurate list of all persons licensed and registered by said board ; and such records and lists shall be public records and at all reasonable times open to public inspection ; and a transcript of the same, or any part thereof under the seal of the board and certified by the secretary, shall at all times and places be competent evidence of the facts therein stated or recited. A sworn statement by the secretary under the seal of the board, that any person is or is not a registered dentist, shall be *prima facie* evidence that such person is or is not entitled to practice dentistry in this State. The president of the board and its secretary shall have power to administer oaths, and the board to hear testimony, in matters relating to the duties imposed upon it by law.

SECTION 4. It shall be the duty of every person who, at the time this act shall take effect, is a legal practitioner of dentistry in this State, as shown by the books of registration now kept by said board, and of all persons who thereafter shall be licensed by said board to practice dentistry within six months from the date of the passage of this act, to cause his or her name and residence or place of business to be registered annually with said board of examiners, who shall keep a book for that purpose. The fee for every such registration shall be fifty cents.

SEC. 5. Any person not lawfully entitled to practice dentistry at the time when this act shall take effect, who shall desire to practice dentistry in this State, shall appear before said board for examination with reference to his or her knowledge and skill in dentistry; and if said examination shall satisfy said board that such person possesses suitable qualifications to practice dentistry, it shall issue to such person a license to practice dentistry in accordance with the provisions of this act.

SEC. 6. Any person desiring to practice dentistry prior to meetings of the board of examiners shall apply to some member of said board for examination with reference to his or her qualifications; and if satisfied that the applicant possesses the necessary qualifications, such member shall issue a temporary license to practice dentistry, until the next regular meeting thereafter, and no longer. Said board of dental examiners shall require each person appearing before it for examination for temporary license to pay said board the sum of five dollars for such examination.

SEC. 7. Any person shall be regarded as practicing dentistry within the meaning of this act who shall perform upon the human teeth, or parts adjacent thereto, any operation or operations as are commonly known and designated as dental operations, or operations in dental surgery, or who shall hold himself or herself out, by means of signs, cards, advertisements or otherwise, as a dentist or dental surgeon.

Any legally qualified practitioner of dentistry, or any properly organized and equipped and reputable dental college, or dental department of any reputable school or university, may take into preceptorship a student or students who shall be permitted to perform such operations in the offices or infirmaries of such preceptors, and under their immediate supervision, and not otherwise: *Provided*, that nothing in this act shall be construed to prevent any legally qualified resident physician and surgeon from extracting teeth, or to prevent any person from using any domestic remedy or other proper means for the relief of pain in case of an emergency: *And provided further*, that nothing contained in section 10 of an act entitled "An act to regulate the practice of medicine in the State of Illinois," approved June 16, 1887, in force July 1, 1887, shall be construed to prevent any legally qualified dentist from practicing dentistry in this State.

SEC. 8. Said board of dental examiners shall require each per-

son appearing before it for examination as aforesaid to pay said board a fee not exceeding ten dollars, which shall in no case be returned to such applicant, which shall entitle him to registration as a practitioner of dentistry in this State for the current or registration year in which said license shall be issued; out of the funds received by said board under the provisions of this act from the fees or penalties provided in this act, the members of said board may receive as compensation the sum of \$5 for each day actually engaged in the duties of their office, and all legitimate and necessary expenses incurred in attending its meetings, or in the discharge of other official duty. All moneys received by the board shall be held by the secretary thereof, subject to the order of said board and for its uses in enforcing the provisions of this act; and the secretary shall give such bond as the board may from time to time require. No part of the expenses of the board shall be paid out of the State treasury. Said board shall on the 15th day of December in each year, make an annual report of its acts and proceedings to the governor, with an account of all monies received and disbursed during the previous year.

SEC. 9. Any violation of the provisions of this act shall subject the party violating the same to a penalty of not less than \$25 nor more than \$50 for the first offense, and for every subsequent offense not less than \$100 nor more than \$200. All suits for the recovery of the several penalties prescribed in this act shall be prosecuted in the name of the People of the State of Illinois, in any court having jurisdiction, and it shall be the duty of the State's attorney of the county where such offense is committed to prosecute all persons violating the provisions of this act, upon proper complaint being made. One half of any fines or penalties recovered shall be paid into the common school funds of the county in which the suit shall be brought, and the other half thereof to the secretary of said board for the use thereof:

Provided, That either party may appeal, in the same time and manner as appeals may be taken in other cases, except that where an appeal is prayed in behalf of the people, no appeal bond shall be required to be filed, whether the appeal be from the Justice, or from the county or circuit court, or from the appellate court. But it shall be sufficient, in behalf of the People of the State of Illinois, for the use of the Board of Dental Examiners, to pray an appeal, and thereupon an appeal may be had without bond or security:

Provided, further, That no proceeding shall be commenced against any party for failure to annually register, as provided for in section 4, until after such party shall have been served with proper notice of such failure, and the penalty thereby incurred. Each operation performed and each patient treated contrary to the provisions of this act, shall be deemed and held as a separate offense.

SEC. 10. Any person who shall wilfully and falsely claim or pretend to have or hold a certificate of license or registration of this board, or of any similar board of any other State, or who shall wilfully or falsely, with intent to deceive the public, claim or pretend to be a graduate of or hold a diploma granted by any incorporated dental society or dental college, shall be subject to the penalties provided in section 9 of this act, to be sued for and recovered and paid out as in said section provided.

SEC. 11. All laws or parts of laws in conflict with this act are hereby repealed.

A NEW MEDICAL JOURNAL IN CHICAGO.—*The Chicago Medical Record*, journal of the Chicago Medical Society, is the latest aspirant for a place in our library. This journal is published monthly at \$2.00 per year, by W. T. Keener, 96 Washington street, Chicago. Archibald Church, M. D., is the editor. It is a very handsome, well printed periodical, containing 96 pages in the first issue. It is intended by the editor to make it a strictly first-class journal. The proceedings of the Chicago Medical Society will be the main feature, but it will in addition consist of the following:

"In science there is nothing local, yet it remains to be said that there are interests that have an especial importance to a given locality. Such of these as pertain to Chicago and the great Northwest it will be the especial endeavor of the *Chicago Medical Record* to conserve and promote.

"*The Chicago Medical Record* will be octavo in size, convenient to handle and for permanent binding.

"Each number will contain: Original articles, society proceedings, a department showing the current advances in the various branches of medicine and surgery, editorials, news items, meteorological and health reports, and other matters of interest to the profession."

BOOKS RECEIVED.

COMPTES RENDUS DU PREMIER CONGRÈS DENTAIRE INTERNATIONAL, tenu a Paris. A L'Occasion de L'Exposition Universelle de 1889. Sous le Patronage de M. Le Ministre du Commerce, de la Société D' Odontologie de Paris, et de La Société Odontologique de France. Paris Librairie Lecrosnier et Babé 1891.

DENTAL SURGERY, INCLUDING SPECIAL ANATOMY AND PATHOLOGY. A manual for students and practitioners, by Henry Sewill, M. R. C. S., L. D. S., Eng. Third edition, with 206 illustrations. Philadelphia. P. Blakiston, Son & Co., 1890. Price, cloth, \$3. Pages, 400.

A DICTIONARY OF DENTAL SCIENCE. By Chapin A. Harris and F. J. S. Gorgas. Fifth edition. Carefully revised and enlarged. P. Blakiston, Son & Co., Philadelphia, 1891. Pages, 639.

A new edition of this standard book of reference for the dental student and practitioner is just out. A very careful examination shows the addition of many new words with their exact definition, as well as new modes of practice and their definition. It is indispensable to the student and the advanced dentist of to-day, and we take great pleasure in commending it to our readers. All the latest authorities in medical and applied sciences have been freely drawn upon, and its accuracy is unquestioned.

PAMPHLETS RECEIVED.

Proceedings of the National Association of Dental Faculties, at the seventh annual session held at Excelsior Springs, Mo., August 4 to 8, 1890. J. D. Patterson, Secretary, Kansas City, Mo.

NOTES ON THE PREPARATION OF MICROSCOPICAL SECTIONS OF TEETH AND BONE, by J. Howard Mummery, M. R. C. S. L. D. S., London. Reprinted from the Transactions of the Odontological Society of Great Britain. May, 1890. With three plates.

ANÆSTHESIA. Dr. G. Q. Colton.

CORRECTING IRREGULARITIES OF THE TEETH. V. H. Jackson, M. D., D. D. S.

REMOVAL OF TONSILLAR HYPERTROPHY BY ELECTRO-CAUTERY DISSECTION. Edwin Pyncheon, M. D.

TREATMENT OF ROOT CANALS. Dr. J. J. Jennelle, Cairo, Ill.

Notes on the therapeutic use of the new Iodine Compound Aristol. W. H. Schieffelin & Co., New York.

DENTAL COLLEGE COMMENCEMENTS.

NEW YORK COLLEGE OF DENTISTRY.

The twenty-fifth annual commencement exercises of the New York College of Dentistry were held at Chickering Hall, New York, N. Y., on Tuesday evening, March 10, 1891. The valedictory was delivered by Clarence Delbert Gilson, D. D. S., and the address to the graduates by Rev. Henry Y. Satterlee, D. D. S.

The number of matriculates for the session was two hundred and eighty-two. The degree of Doctor of Dental Surgery was conferred on the following (85) graduates by Hon. J. Hampden Robb, president of the board of trustees:

Frank L. Adair, New Jersey.
 Gustav H. Adler, Saxony.
 Otto H. Abbanesius, New Jersey.
 Oliver H. Aldred, New York.
 Charles E. Allen, New York.
 Bruno E. Amyot, New York.
 Alfred A. Argilagos, Cuba.
 David C. Baker, New Jersey.
 George F. Barrett, Connecticut.
 Charles G. Bassett, New York.
 John Biava, France.
 Bernard B. Bromberg, Austria.
 John G. Broughton, New Jersey.
 Mark H. Brown, Massachusetts.
 Steward F. Bullis, New York.
 Fred L. Burgess, New York.
 David W. Byrne, New York.
 Joseph M. Bird, Porto Rico.
 Thos. N. Bradfield, Jr., New Jersey.
 Charles M. Cannon, Utah.
 Joseph E. Chauvet, New York.
 Walter H. Clayton, New York.
 Edward T. Cleveland, Canada.
 Frederick G. Collett, England.
 James L. Dickson, Vermont.
 Wm. H. Douglas, M. D., New York.
 Samuel J. Downs, New York.
 Charles H. Emerson, New York.
 Frank A. Fielding, New York.
 Alfred C. Fones, Connecticut.
 William O. Garside, Alabama.
 Clarence D. Gilson, Canada.
 Henry W. Graves, New York.
 Henry W. Guilshan, Massachusetts.
 John T. Hanks, New Jersey.
 F. T. A. Hannemann, M. D., Germany.
 James W. Hardy, New Jersey.
 Morris P. Hart, Kansas.
 Louis Hess, New York.
 William A. Hornung, New Jersey.
 William S. Hough, New York.
 Benjamin Jacobson, England.
 Albert R. Kadelbach, Germany.

James F. Knapp, New York.
 George W. Knight, New York.
 Charles B. Leverich, New York.
 Frank G. Lockwood, New York.
 Charles M. Luckey, New Jersey.
 Fred W. Ludlum, New York.
 Samuel G. McCormick, Canada.
 Frederick McNerny, Connecticut.
 John B. Meeker, New York.
 Robert E. Merwin, New York.
 Fred. Messerschmitt, New York.
 Waldo H. Minor, Connecticut.
 Frank L. Morhard, Switzerland.
 Frank Morris, New Jersey.
 Alexander H. Moss, Russia.
 Channing A. Newhall, Connecticut.
 Henry S. Nichols, Connecticut.
 Samuel J. L. Norton, New York.
 Raul Ochoa, Venezuela.
 William R. O'Neill, New York.
 Mordecai H. Overton, New York.
 William B. Park, New York.
 Winthrop B. Payne, New York.
 Andrew J. Perry, Vermont.
 Henry P. Pfeiffer, New Jersey.
 Frank L. Phillips, New York.
 Irving H. Pomeroy, Massachusetts.
 William D. Pravost, New York.
 Louis E. Potter, Vermont.
 Joseph S. Quinlan, New York.
 George N. Reeves, New Jersey.
 Walter D. Rice, New Jersey.
 Thomas H. Roche, B. S., New York.
 Charles W. Root, New York.
 John C. Root, New York.
 Samuel P. Russell, Maryland.
 John F. Snedaker, Utah.
 August G. Stuki, New York.
 Walter F. Van Gieson, New York.
 Louis E. Vernon, New York.
 Francis Weinlandt, New York.
 John F. Willis, New York.

PENNSYLVANIA COLLEGE OF DENTAL SURGERY.

The Thirty-Fifth Annual Commencement Exercises of the Pennsylvania College of Dental surgery were held at the Academy of Music, Philadelphia, Pa., Friday evening, February 27th, 1891.

The degrees were conferred by I. Minis Hayes, M. D. president. The Annual Address was delivered by Professor C. N. Pierce, D. D. S. The following is a list of names of the (94) graduates who received the degree of Doctor of Dental Surgery :

Wm. Alexander, Penn.	H. S. Keepers, Penn.
E. W. Armistead, Va.	W. S. Kelly, Penn.
Chauncey Bachman, New York.	E. S. Kirkpatrick, Penn.
N. J. Baker, New York.	Chas G. Koester, New York.
H. P. Baldwin, N. H.	Louis F. Koehler, Penn.
Roberto Barrera, U. S. Columbia.	Ricardo Larenas, Chili.
T. W. Bortree, M. D., Penn.	H. W. Leightner, Penn.
Richard Y. Bates' Minn.	A. M. Lewis, Minn.
L. B. Bowie, Penn.	Wm. E. Linn, Ohio.
Chas. G. Bowles, Mich.	B. M. Loar, Penn.
Wm. P. Brown, Minn.	F. A. Lackner, Canada.
Chas. M. Brooks, New York.	Wm. J. Longnecker, New York.
J. A. Brunet, Chili.	Mateo Lucena, Venezuela.
Melquiades Bruges, U. S. Columbia.	Felice Maddalena, Italy.
J. P. Calvert, Penn.	A. P. Matson, Conn.
George Campusano, Penn.	A. B. Miller, Penn.
C. W. Chapman, California.	Morton Mills, New Jersey.
Cunningham Clark, Penn.	Fred. Miltenberger, Germany.
Edw. Conover, New Jersey.	C. O. Morris, Penn.
Sam. M. Cooley, Ind.	E. C. Musser, Penn.
A. G. Courtney, New York.	S. J. MacMains, Penn.
A. E. Cribbs, Penn.	Ellen MacMurray, Penn.
Z. H. Curry, Penn.	H. McIntyre, Canada.
T. J. Crymes, S. Carolina.	A. L. Parker, N. H.
C. T. Dahlin, Ill.	V. A. Pazmino, U. S. Columbia.
H. H. Donaldson, Penn.	Henry A. Phillips, England.
Geo. W. Dunbar, Jr., New York.	E. E. Phipps, Penn.
C. B. Edmiston, Penn.	Wm. C. Porter, England.
Max J. Fischel, Penn.	Joaquin Prieto, U. S. Columbia.
S. W. Frazier, Ohio.	C. G. Richardson, Penn.
J. W. Fulstone, Nevada.	F. W. Rice, M. D. Penn.
G. L. Grier, Delaware.	Louis S. Robensohn, M. D., Russia.
M. E. Grossman, Honolulu, H. I.	Emetrio Serrano, U. S. Columbia.
G. W. Gunther, Germany.	Jules Simond, Switzerland.
E. T. Grosvenor, Mich.	Geo. N. Slater, Penn.
J. G. St. Hammond, Sweden.	C. P. Shoemaker, Penn.
W. J. Hardie, L. D. S., Scotland.	F. W. Steinbock, Penn.
W. G. Hays, Penn.	H. J. Stewart, New York.
J. J. Heffernan, Penn.	T. B. Stewart, Penn.
L. W. Heinlein, Ohio.	Ellwood Tate, Penn.
Geo. H. Heist, Virginia.	W. K. Thorp, Penn.
H. M. Hertig, Penn.	C. L. True, N. H.
Winfield M. Hubler, Penn.	Chas. S. Voorhis, Penn.
Morgan L. Hulme, Penn.	S. D. Weber, Penn.
E. L. Irving, Minn.	W. R. Wilkinson, Canada.
F. W. Ivory, Canada.	Emily W. Wyith, M. D., Penn.
G. R. Johnson, Canada.	Emma C. Wygant, New York.

The number of matriculates was 351.

SOUTHERN MEDICAL COLLEGE—DENTAL DEPARTMENT.

The fourth annual commencement exercises of the Dental Department of the Southern Medical College were held at Concordia Hall, Atlanta, Ga., on Saturday evening, February 28, 1891. The valedictory was delivered by W. E. Speir, D. D. S., and the annual address by Mr. Hamilton Douglas. The number of matriculates for the session was one hundred and five. The degree of D. D. S. was conferred on the following (38) graduates by Dr. T. S. Powell, president of the board of trustees:

E. G. E. Anderson, A. B., Tennessee.
H. J. Arnold, Georgia.
F. L. Adams, Alabama.
J. K. Blasingame, Georgia.
S. J. Bivings, South Carolina.
W. O. Breedlove, Alabama.
W. E. Beacham, Georgia.
J. B. Bearden, M. D., Georgia.
E. W. Clark, Georgia.
G. W. Carreker, Georgia.
J. B. Dorsett, Georgia.
B. C. Duncan, Alabama.
E. G. Griffin, Georgia.
L. D. Gale, Georgia.
T. L. Greene, Alabama.
E. L. Hanes, Georgia.
T. P. Hinman, Georgia.
D. H. Harris, Georgia.
I. S. Harn, Georgia,

N. S. Lea, South Carolina.
D. S. Lightcap, Alabama.
D. R. Lide, Georgia.
W. A. Lane, Alabama.
H. W. Lubben, Texas.
R. S. McArthur, Georgia.
J. H. Merritt, Georgia.
J. B. Moncrief, Georgia.
F. J. Pulford, Louisiana.
W. R. Pearson, Georgia.
J. A. Reed, Georgia.
J. H. Rush, Mississippi.
W. E. Speir, Georgia.
C. L. Toole, Georgia.
W. J. Wade, Georgia.
J. M. Wilkes, M. D., Georgia.
H. R. Williams, Georgia.
J. W. Wade, New York.
J. E. Woodward, Georgia.

BALTIMORE COLLEGE OF DENTAL SURGERY.

The fifty-first annual commencement exercises of the Baltimore College of Dental Surgery, were held Monday Evening, March 23, 1891, at Harris' Academy of Music, Baltimore, Md. Conferring of degrees by Prof. R. B. Winder; conferring of class honors by Prof. M. W. Foster. First honor, Frank Cheatham Wilson, Ga., second honor, Oswald Alden Parker, N. S.

HONORABLE MENTION.

Mozart William Rainold, La.
Josiah Gaston Fife, Tex.
Frank Sheffield Morton, N. S.
James Kendall Burgess, Va.
William Edward Wolftrum, Wis.
Joseph John Battle, N. C.
Edward Hamm, Mass.
Thomas Arthur Cronin, Md.

Harvey Thomas Greenlaw, N. B.
Theodore Albion Bailey, Ga.
Ernest Charles Deuel, Cal.
William Dick, Cal.
Warren Milton Sharp, N. B.
Lawrence Marsden Cleckley, Ga.
Ulysses Amoret Dalton, N. Y.

Awarding of prizes, Dr. Fred A. Levy, President Board of Visitors. Operative, John White David, Tex. Most Honorable Mention, Wm. Everette Nye, Cal., Frank William Hill, Iowa. Honorable Mention, Warren Milton Sharp, N. B., Hermann Reichhelm, D. D. S., Ger., Andrew Youngs, N. Y. Mechanical: Frank Cheatham Wilson, Ga. Honorable Mention, Charles Burrett Tarr, Me. Bridge Work: Josiah Gaston Fife, Tex. Very Honorable Mention, William Dick, Cal. Essay on Orthodontia, Frank Sheffield Morton, N. S. Honorable Mention, Oswald Alden Parker, N. S. Annual Oration by Dr. Wayland

Ball. Valedictory, subject: "The Guiding Star of Progress," Edward Hamm, Mass. Prizes given, First Honor by Faculty. Second Honor by James Hart. Operative and Bridge Work, by The S. S. White Dental Manufacturing Co. Mechanical, by Snowden and Cowman. Essay on Orthodontia, by Dr. J. N. Farrar, N. Y. The number of matriculates during the session was 224.

The degree of Doctor of Dental Surgery was conferred on the following named (76) graduates:

David Lincoln Aber, Penn.
 Charles Elmer Altemus, Penn.
 Louis Doumeing Archinard, La.
 Walter Varien Austin, Minn.
 Theodore Albion Bailey, Ga.
 Joseph John Battle, N. C.
 Samuel Edgar Beecher, Penn.
 Horace Imbrie Beemer, N. J.
 Ernest Bent, Mass.
 Robert Clarence Bradshaw, Md.
 Calvin Daniel Brown, Cal.
 John Henry Bulett, Penn.
 James Kendall Burgess, Va.
 James Fleetwood Butts, W. Va.
 John Joseph Carroll, W. Va.
 Willard Lemuel Chapin, Penn.
 Calvin Owen Chunn, Fla.
 Lawrence Marsden Cleckley, Ga.
 Charles Gilbert Colby, Conn.
 Thomas Arthur Cronin, Md.
 Frank Morton Conkey, Ill.
 Ulysses Amoret Dalton, N. Y.
 John White David, Tex.
 Ernest Charles Deuel, Cal.
 James Frederick Downs, Md.
 William Dick, Cal.
 Edward Eggleston, Va.
 Josiah Gaston Fife, Tex.
 James George Findlay, Ontario.
 Branch Garner, La.
 James Burr Gould, Va.
 William Fred Graham, S. C.
 Harvey Thomas Greenlaw, N. B.
 Guy Gress, Penn.
 Edward Hamm, Mass.
 Lewis Adam Hauser, N. C.
 Samuel Jacob Heindel, Penn.
 Elmer Ellsworth Henry, Penn.

Robert Samuel Henry, Md.
 Frank William Hill, Iowa.
 George Harrison Jackson, Penn.
 Walter Lee Jones, Miss.
 George Kress, Ohio.
 Thomas Bagwell Leatherbury, Va.
 Harold Sanford Lockwood, N. Y.
 John Campbell Maloney, Va.
 Edmund Banning Marshall, Jr., Ga.
 George Vansant Milholland, Md.
 Frank Sheffield Morton, N. S.
 James Sharp McDonald, Penn.
 William Everette Nye, Cal.
 Cameron Eugene Orndorf, Penn.
 Edward Bagwell Parker, Va.
 Oswald Alden Parker, N. S.
 John Casper Pfeiffer, Md.
 Mozart William Rainold, La.
 Hermann Reichhelm, Ger.
 Charles Peter Rice, Penn.
 George Ollie Roberts, Ga.
 Fred Cromwell Royce, N. Y.
 George Percival Schumacker, Mass.
 Thomas Walter Sharpe, Penn.
 Warren Milton Sharp, N. B.
 Otis Fletcher Sims, Fla.
 William Marion Steinmeyer, S. C.
 William Malcolm Stewart, N. Y.
 George Edwin Stoddard, Vt.
 Charles Burrett Tarr, Me.
 William Edward Teaseley, Va.
 Thomas Killen Tharp, Ga.
 Rowland Haldane Walker, Va.
 Frederick Ransom Wilder, Vt.
 Frank Cheatham Wilson, Ga.
 Herrmann Wurzel, Ger.
 William Edward Wolfrum, Wis.
 Andrew Youngs, N. Y.

MEHARRY DENTAL DEPARTMENT—CENTRAL TENNESSEE COLLEGE.

The fifth annual commencement exercises of the Meharry Dental Department of the Central Tennessee College were held, in connection with those of the medical and pharmaceutical departments, at Masonic Theater, Nashville, Tenn., on Thursday, February 19, 1891. The salutatory address by A. O. Lockhart, addresses by Dr. N. G. Tucker, Senator Early, and others. The number of matriculates for the session in the dental class was five.

The degree of D. D. S. was conferred by Dr. J. Braden, President of the faculty, on (1) the graduate, G. W. Bunn, of Arkansas.

PHILADELPHIA DENTAL COLLEGE.

The Twenty-Eighth Annual Commencement Exercises of the Philadelphia Dental College were held at the Academy of Music, Philadelphia, Pa., on Thursday, February 26, 1891. The address to the graduates was delivered by Professor J. Foster Flagg, D. D. S., valedictory by Charles L. Ziegler, D. D. S. The number of matriculates for the session was three hundred and fifteen. The degree of Doctor of Dental Surgery was conferred on the following (146) graduates by Charles P. Turner, M. D., secretary:

Joseph B. Aaron, New York.
 Thomas H. Agnew, Canada.
 Edmund H. Albee, New Hampshire.
 H. Augustus Aldred, Pennsylvania.
 George J. Andler, Massachusetts.
 Cuthbert C. Archer, West Indies.
 Albert R. Baker, Canada.
 Edward C. Barrett, Maine.
 Louis L. Beach, Connecticut.
 Fred L. Black, New Brunswick.
 J. E. Blanchard, Jr., Louisiana.
 Frank E. Booth, Kentucky.
 William H. Booth, Pennsylvania.
 William M. Bolger, Pennsylvania.
 Charles S. Bragdon, Maine.
 Clark W. Brown, Pennsylvania.
 Oscar W. Burdats, West Virginia.
 John G. Buss, L. D. S., France.
 Wm. S. Caldwell, Jr., Pennsylvania.
 Wm. L. Callaway, Missouri.
 C. G. Capwell, Rhode Island.
 Thomas D. Carman, New York.
 Ed. Caspersonn, Australia.
 E. R. Chatham, New York.
 Arthur L. Chase, Maine.
 B. O. Chapman, New York.
 S. W. Chapman, Connecticut.
 Julius Cohn, Roumania.
 William S. Cook, Pennsylvania.
 A. Olin Comins, Connecticut.
 Martha C. Corkhill, Pennsylvania.
 Elmer Crawford, Pennsylvania.
 William A. Damon, Connecticut.
 Reuben S. Davey, New York.
 Arthur de Garis, New York.
 W. R. de Les Derniers, Canada.
 N. P. Dennis, M. D., California.
 Alexander Dienst, Missouri.
 G. A. Dungan, California.
 Geo. F. Eisenbrands, Minnesota.
 Jacob S. Elder, Pennsylvania.
 J. T. Elliott, Kentucky.
 William S. Engel, Pennsylvania.
 William S. Fickes, Ohio.
 H. M. Fry, Pennsylvania.
 Charles Fyffe, Jr., Australia.
 Wm. H. Gelston, New Jersey.
 James L. Graves, Oregon.
 Monroe Griswold, Connecticut.

W. Edward Halsey, New York.
 Wm. T. Halstead, Australia.
 Joseph T. Hambley, New Jersey.
 Wm. A. Hastings, New York.
 Charles T. Havice, Pennsylvania.
 Harry W. Haynes, Maine.
 Geo. A. Henderson, Pennsylvania.
 Harold C. Hewish, Canada.
 Ambrose L. Hill, New York.
 Arthur G. A. Hinder, Australia.
 H. L. Hodgkins, Maine.
 C. W. Hoopes, Pennsylvania.
 Carl F. Hohl, Indiana.
 D. Elmer Hunter, Canada.
 Masatsune Ichinoi, Japan.
 J. Holmes Jackson, Canada.
 William D. Jessop, Pennsylvania.
 David W. Johnston, New Jersey.
 Peter Justus, Portugal.
 Joseph Kalbfus, Pennsylvania.
 Donald E. Kerr, Canada.
 Jesse D. King, Missouri.
 Thomas J. King, Maine.
 Walter W. Lewin, England.
 Walter D. Lewis, New York.
 C. R. Lindstrom, Sweden.
 Howard Lofland, Delaware.
 William C. Logan, Oregon.
 Irving H. Losee, New York.
 D. A. MacMullen, California.
 Nixon Maley, Canada.
 Emile A. Martin, South America.
 Benjamin B. Martin, Pennsylvania.
 George Maschke, Ohio.
 P. M. B. McCullough, Pennsylvania.
 Wili McDowell, Indiana.
 John McHugh, Jr., New York.
 Charles S. McNeill, New York.
 Frank P. Miller, New York.
 Kazuyos Nakamura, Japan.
 Sigmund Nadel, Austria.
 Ralph A. Neel, Pennsylvania.
 Geo. Q. Nickerson, Maine.
 Isaac O. Noling, Illinois.
 Henry B. Nones, Pennsylvania.
 John W. O'Brien, New York.
 Fred H. Parker, Nova Scotia.
 Fenimore Parkhurst, New York.
 Winston G. Percival, Pennsylvania.

Walter I. Pratt, Utah.
 N. E. Preston, Massachusetts.
 Burt Pressey, New Jersey.
 E. G. Quattlebaum, A. B., So. Carolina.
 Richard N. Randles, Canada.
 David P. Reid, New York.
 Frank O. Rhoads, Missouri.
 E. L. Richardson, Maine.
 John W. Robb, Canada.
 Fred A. Roberts, New Brunswick.
 John L. Robson, Pennsylvania.
 C. Harry Roe, Pennsylvania.
 Fredrick W. Root, Massachusetts.
 James M. Ryan, Massachusetts.
 Wesley W. Shirlow, Australia.
 Eugene A. Shillinger, New York.
 Walter R. Slegel, Pennsylvania.
 Clarence U. Smith, New York.
 William C. Snider, New York.
 Robt. M. Solomons, South Carolina.
 Geo. M. Spangler, Pennsylvania.
 William A. Sprout, Pennsylvania.
 J. A. Stackhouse, Canada.
 Carl P. Stamm, Pennsylvania,

Nathan P. Stark, Pennsylvania.
 N. D. Steele, Canada.
 Henry E. Stockton, North Carolina.
 Joseph C. Sullivan, Alabama.
 John Sweeney, Pennsylvania.
 Friedrich W. Taube, Germany.
 Robt. W. Tener, West Virginia.
 B. R. Thistlewood, Illinois.
 Jenkyn Thomas, Jr., Utah.
 Henry H. Tompkins, New York.
 Frank A. Traver, Wisconsin.
 W. J. F. VanAllen, Canada.
 Leo Velescu, Roumania.
 Ralph B. Waite, New York.
 Frank W. Warner, New York.
 Claude E. Wells, Missouri.
 John I. Wells, Missouri.
 Gilman A. Wheeler, Vermont.
 Frank E. Whitcomb, Maine.
 M. P. Winterfield, New York.
 William E. Wright, Delaware.
 William L. Yocum, Pennsylvania.
 R. E. Zellers, Texas.
 Charles L. Ziegler, California.

AMERICAN COLLEGE OF DENTAL SURGERY.

The fifth annual commencement exercises of the American College of Dental Surgery were held at Central Music Hall, Chicago, March 24, 1891. Conferring of degrees by L. D. McIntosh, M. D., D. D. S., president of college; Class Valedictory by F. P. Burchell; Doctorate Address by I. Clendenen, M. D., D. D. S. The following named (49) persons received the degree of Doctor of Dental Surgery:

W. C. Stanfield.
 F. B. Crooker.
 Henry C. Waack.
 Ernest A. Kohler.
 William Frackelton.
 Sterling D. Tuttle.
 Wm. Bruening.
 H. Hulsebusch.
 N. Huston Teal.
 P. E. Walter.
 Wm. J. Jefferson.
 R. M. McKey.
 G. A. Stevenson.
 J. W. White.
 Henry W. McIntire.
 George Steele.
 Francis A. Carter.
 Aleck M. Swan.
 F. R. Howdle.
 Frank J. Shea.
 Matthew Kalt.
 Miss A. S. Bowers.
 F. A. V. Moller.
 F. P. Burchell.
 Frank J. Kyler.

F. B. Hinchman.
 J. A. Garland.
 W. F. Reber.
 Henry Suesskind.
 Joy L. Frink.
 Wm. Mitchell.
 W. F. Gilroy.
 Chas. P. S. Beerend.
 Geo. G. Barlow.
 C. McCarty.
 J. S. Goodmanson.
 Mrs. M. Wiede.
 H. Wiede, M. D.
 W. T. Buchanan.
 Mrs. H. C. Magnusson.
 T. J. Randall.
 Frank H. Stafford.
 T. Rogers.
 P. S. McKenzie.
 C. E. Ward.
 Charles E. Douglass.
 Watson Martin.
 J. F. Eldred.
 L. T. Creighton.

MISSOURI DENTAL COLLEGE.

The twenty-fifth annual commencement exercises of the Missouri Dental College, were held at Memorial Hall, St. Louis, Mo., Thursday evening, March 12, 1891. Prof. H. H. Mudd, Dean, delivered the annual address. The degree of Doctor of Dental Surgery was conferred upon the following named (28) gentlemen :

Edward L. Beatie, Higginsville, Mo.
Canute L. Brudewald, Beaver Falls,
Penn.

Arthur C. Bedford, Bloomfield, Mo.
M. C. Boswell, Wright City, Mo.
James S. Coyle, St. Louis, Mo.
Marvin L. Cummings, Farmer City, Ill.
Charles E. Dungan, Springfield, Ill.
W. R. Eckle, Lexington, Mo.
James B. Harrison, New Albany, Ind.
George D. Kennedy, Colorado Springs,
Colo.

James B. Newby, St. Louis, Mo.
John W. Markwell, Coryden, Ind.
Jonn E. Masterson, Madisonville, Tex.

Reuben G. Porter, Petoska, Mich.
Jasper DeG. Peak, Osage City, Kan.
A. S. Purdy, Carbondale, Ill.
William T. Rutledge, Monroe City, Mo.
George C. Schwarz, Edwardsville, Ill.
Samuel Schrantz, Warrenton, Mo.
Carl Schumacher, St. Louis, Mo.
Otto Settelien, Basle, Switzerland.
Herman Saxermeyer, Red Bud, Ill.
John H. Thiele, Hanover, Germany.
H. G. Voorhies, Moberly, Mo.
J. Warren Wick, St. Louis, Mo.
James F. Wallace, Argola, Mo.
Matthew D. Wilson, Lexington, Mo.
P. H. Winans, Pittsfield, Ill.

Matriculates, ninety.

Dr. W. N. Morrison, President of the St. Louis Dental Society, awarded the prizes.

"The St. Louis Dental Society Prize."—An elegant gold medal, to William T. Rutledge, D. D. S., receiving the highest vote on final examination.

"The J. W. Wick Prize."—Twenty-five dollars in gold, to George D. Kennedy, D. D. S., receiving next to the highest vote on final examination.

"The S. S. White Dental Manufacturing Company Prize."—A set of Varney Pluggers, to Reuben G. Porter, D. D. S., excelling in operative dentistry.

"St. Louis Dental Manufacturing Company Prize."—A Laboratory Lathe, to James F. Wallace, D. D. S., for the best specimen case of artificial teeth.

UNITED STATES DENTAL COLLEGE.

The First Annual Commencement Exercises of the United States Dental College were held at the Recital Hall of the Auditorium, Chicago, March, 26, 1891. Dr. J. J. M. Angear gave the opening address, while H. Barry Millican was valedictorian.

Dr. G. Frank Lydston also delivered an address. The Degree of Doctor of Dental Surgery was conferred on the follow named (11) gentlemen ;

Edwin Burke.
H. Barry Millican.
Paul A. Piehl.
Wm. H. G. White.
Wm. M. Evans.
Gideon A. Price.

F. F. Scherman.
F. J. Warrenfells.
Park B. Leason.
John C. Prill.
Emil Seghers.

DENTAL DEPARTMENT—LAKE FOREST UNIVERSITY.

The ninth annual commencement exercises of the Chicago College of Dental Surgery, Dental Department of the Lake Forest University, were held at the Columbia Theater, Chicago, Tuesday, March 24, 1891. Annual report by A. W.

Harlan, M. D., D. D. S., Secretary. Conferring of degrees by Truman W. Brophy, M. D., D. D. S., Dean. Class Valedictory by George Elmer Hawkins, D. D. S. Doctorate address by Calvin S. Case, M. D., D. D. S. Address by W. C. Roberts, D. D., LL. D., President of the university. Number of matriculates, 323.

The following named (94) gentlemen received the degree of Doctor of Dental Surgery :

Charles Grant Adams, Ill.
 Frank Caruthers Allen, Ind.
 Evan Bailey, Ill.
 Claude Gibson Baker, Ill.
 William Henry Balluff, Ill.
 Horace Howard Ball, Ill.
 Charles Sumner Bigelow, Fla.
 *Frederick Herman Birchmeier, Ill.
 Charles Horatio Boughton, Ill.
 David Arnold Bowerman, Can.
 Raymond W. Boyer, Mich.
 Francis Morton Bozer, Ind.
 Clare Smith Bradley, Wis.
 Oscar Franklin Brightfield, Pa.
 *John Bradley Burns, Ill.
 James Warren Cameron, M. D., Wis.
 Frank Chaffee, M. D., Ind.
 James Elery Clark, Iowa.
 David Franklin Cotterman, Ind.
 *George Mortimer Crisup, Ill.
 *Albert Miller Davis, Mich.
 Henry Franklin Dean, Wis.
 Fred Chittenden Devendorf, Wis.
 Wesley G. De Vore, Ill.
 Willis H. Dwight, Iowa.
 David Henry Evey, Ill.
 Walter Harvey Fancher, M. D., Wis.
 *Manfred S. Fraser, Colo.
 Donald McKay Gallie, Can.
 Henry Irvén Gibson, Wis.
 Winthrop Girling, Ill.
 Walter John Godfrey, Ill.
 John Jay Grout, Iowa.
 Hans Alfred Guenther, Ill.
 Joseph Edwin Hart, Ill.
 Augustus, Antonius Hubertus Hamer,
 Holland.
 James Edmund Harned, Ill.
 George Elmer Hawkins, Ill.
 George Edward Henry, Ill.
 *Charles Francis Hunt, Ill.
 Edgar Cowen Kaye, Ill.
 Edward Francis Keefe, Ill.
 Charles Grant Keehn, Ind.
 Sydney De Bruce Knapp, Wis.
 *Elmore David Lyons, Ill.
 James Freeman Martin, S. D.
 Charles Augustus McDermand, Can.

Fred Randolph McLean, Ill.
 Hugh McNeil, Mich.
 Will F. Michaelis, Ill.
 *Edwin Dorland Neff, Ill.
 Charles Odell, Ill.
 *Frank Adelbert Paine, Ill.
 Herman G. Pape, Iowa.
 John Isherwood Parker, Ill.
 Robert McCheyne Pearce, Ill.
 Stephen Clark Pierce, Wis.
 Frank James Powell, Wis.
 Ulysses Grant Poyer, Ill.
 John Hollis Ramsey, Pa.
 Edd Shelby Reed, Ill.
 William Augustus Reed, Iowa.
 *William Titsworth Reeves, Ill.
 *Paul Albert Riebe, Wis.
 Mervin B. Rimes, Mich.
 Warren Mayo Ringsdorf, Wis.
 Cyrus Harvey Robinson, Minn.
 Archer West Rodman, Wis.
 Peter Hansen Ruus, Ill.
 John Martin Saucerman, Ill.
 Phillipp John Valentine Schnell, Ill.
 Colfax Schuyler, Ill.
 Louis Albert Schultz, Ill.
 William Hale Simmons, Wis.
 Howard Taylor Smith, Ill.
 Oscar Robert Smith, Ill.
 *Frederick Augustus Stetson, Ill.
 William W. Strayer, Ohio.
 *Henry Clement Strong, Ill.
 Sherman Tecumseh Taylor, Ill.
 *Charles N. Thompson, Ill.
 Peter William Thorelius, Ill.
 Frank Samuel Trickey, Ill.
 Wallace E. Tucker, Ill.
 *William Starr Van Nostrand, Ill.
 Patrick Henry Welch, Wis.
 Adolph Andrew Wendell, Wis.
 Raymond Joseph Werker, Wis.
 Jarvis William Wetherbee, Iowa.
 Row Prescott Wilcox, Ill.
 Lorenzo Shepherd Wilson, M. D., Iowa
 Jonas Terrence Williams, Iowa.
 Frank Valentine Yorker, Mich.
 Clarence W. Young, Mich.

*Certificates of Honor for having attended a Spring course of lectures.

DEPARTMENT OF DENTAL SURGERY—UNIVERSITY OF MARYLAND.

The Ninth Annual Commencement of the Department of Dental Surgery of the University of Maryland was held at the Academy of Music, Baltimore, Md., Wednesday evening, March 18th, 1891.

Reading of Mandamus by the Dean. Ferdinand J. S. Gorgas, M.D., D.D.S.

Conferring of Degrees and award of prizes. By Ferdinand J. S. Gorgas, M.D., D.D.S., owing to the illness of Hon. S. Teackle Wallis, LL.D., Provost of the University.

Address to the graduates, by Rev. J. J. G. Webster, D. D.

Class Oration by William H. Conner of New Jersey.

The following named gentlemen received the Degree of Doctor of Dental Surgery.

Harry W. Allwine, Nebraska.
J. Perrin Anderson, South Carolina.
Henry C. Bagby, M. D., California.
Denison Holmes Baldwin, Virginia.
Frederick A. Barr, Montana.
James G. Benjamin, Montana.
Capers W. Blalock, Florida.
John D. Booth, Canada.
J. William Boozer, A. B., S. Carolina.
Aubrey R. Bowles, Virginia.
Emory M. Bowlus, Maryland.
Chas S. Boyette, North Carolina.
Elvie S. Boyle, Maryland.
Samuel S. Brotherton, Iowa.
George L. Bruce, Maryland.
F. Wayne Chessrown, Pennsylvania.
M. H. Pettway Clark, N. Carolina.
William H. Conner, New Jersey.
Geo. L. Deichmann, Maryland.
William Earle, South Carolina.
Will H. Ewald, Virginia.
William Meade Field, Virginia.
Herbert F. Gorgas, Maryland.
J. William Grove, Pennsylvania.
W. Oakley Haines, Maryland.
Jake V. Haller, Virginia.
Henry F. Harris, Virginia.
Marion Y. Hart, Virginia.
Will W. Hayes, Pennsylvania.
J. Henry Hoffman, Maryland.
Charles W. Howard, New Hampshire.
Edward T. Jones, Virginia.

John C. Loeschcke, Germany.
Edwin A. Martin, L.D.S., Canada.
Oscar Matt, New York.
Virgil J. McComb, Missouri.
Clyde M. McKelvey, Pennsylvania.
T. Benton Moore, Pennsylvania.
Frank A. Pattinson, New York.
William B. Poist, District Columbia.
William E. Prather, N. Carolina.
Bernard F. Riedel, Maryland.
Richie W. Riley, S. Carolina.
Johannes Rilke, Germany.
Frank Robinson, L.D.S., England.
George B. Rounds, Canada.
Heinrich Sengebusch, Germany.
Henry B. Snow, Maryland.
E. Alva Solomons, S. Carolina.
Alfred E. Sparks, Canada.
A. Hume Sprinkel, Virginia.
C. Carter Sprinkel, Virginia.
F. Myron St. John, Connecticut.
Fraser P. Stehley, West Virginia.
J. Frank Stevens, Pennsylvania.
George W. Stevenson, New York.
R. E. Lee Taliaferro, Virginia.
Charles A. Turner, Canada.
Adolf W. A. Volck, Germany.
Albert S. Wells, N. Carolina.
George F. White, New York.
Robert J. Whitfield, Canada.
Charles E. Wingo, M. D., Maryland.
Charles Rockwell Wood, N. Hamp.

The number of matriculates was 163.

DEPARTMENT OF DENTISTRY—UNIVERSITY OF CINCINNATI.

The Forty-Fifth Annual Commencement Exercises of the Ohio College of Dental Surgery—Department of Dentistry—University of Cincinnati, were held at the Scottish Rite Cathedral, Cincinnati, O., Wednesday Evening, March 11, 1891. The degrees were conferred and an address was delivered by D. W. Clancey, M. D., D. D. S., Vice-President of the Board of Trustees; awarding of prizes by

Prof. H. A. Smith, Dean of the Faculty; Valedictory, by Prof. J. S. Cassidy, M. D., D. D. S., and Class Oration by H. Stewart Gilson. The following were the prizemen:

1st prize, Gold Medal. Best General Examination, Frank Riley Chapman of Ohio.

Honorable Mention { B. B. CORY, Cal.
F. E. FAVRET, Ohio.
J. F. WERNER, JR, Mich.

2d prize. Operative Dentistry. Gold Medal. E. A. Mehaffey of Texas.

Honorable Mention { 1. F. M. McCARTY, Ind.
2. A. A. KUMLER, Ohio.
3. W. S. LEEDS, Ind.

3d prize. Mechanical Dentistry. Gold Medal. E. A. Mehaffey of Texas.

Honorable Mention { 1. J. M. CHASE, Ohio.
2. A. C. SMYSON, Ohio.
3. E. C. MEYER, Ind.

The following named (75) gentlemen received the degree of Doctor of Dental Surgery.

Emanuel Joe Abeles, Ohio.
Benjamin Erskine Ashby, Kentucky.
Travers Barrett, Missouri.
Andrew Hunter Boyd, Tennessee.
William Aristades Burnett, Ohio.
John Wesley Buzzerd, Ohio.
Charles Harrison Campbell, Ohio.
Clinton Emmett Case, Indiana.
Jerome Bonaparte Chaffee, Missouri.
Frank Riley Chapman, Ohio.
John Marcellas Chase, Ohio.
Mrs. Fannie Cooper, Kentucky.
Harlan Breckenridge Copsey, Cal.
Donald Dean Cornell, Iowa.
Ben Brodie Cory, California.
Will McAnney Coryell, Indiana.
Edwin Pierce Cunningham, Jr., Ohio.
Hugh C. Davidson, Ohio.
Gilbert Wesley DeCamp, Jr., Ohio.
Will Herbert Ervin, Indiana.
Frank Eugene Favret, Ohio.
Jay Carpenter Foulk, Ohio.
Thomas Webster Freeman, Canada.
Leander Bishop Furman, Pennsylvania.
Charles Herschel Geiger, Ohio.
Joseph William Gercken, Ohio.
Harry Stewart Gilson, Pennsylvania.
Edward Crum Grant, Ohio.
John Henry Hines, Ohio.
Allen Howe, Minnesota.
Charles Woodward Hubbell, Ohio.
Elmer Ellsworth Israel, Indiana.
James Warren Jackson, Ohio.
Harry Joseph Johnson, Ohio.
Lester Hix Knapp, New York.
Albert Amos Kumler, Ohio.
Clayton Vincent Lanum, Ohio.
William Sherman Leeds, Indiana.

William Stanton Locke, Ohio.
John Floyd Lockhart, M. D., Kentucky.
Lewis Alfred Long, Pennsylvania.
Cornelius Vanderbilt Mallory, Ohio.
John Watson McAbee, California.
Frank M. McCarty, Indiana.
W. Owen McGaughy, Mississippi.
Edward Alexander Mehaffey, Texas.
Edwin Christopher Meyer, Indiana.
George Murray Miller, Canada.
Joseph Vincent Miller, Wisconsin.
Elmer Carlisle Moore, Ohio.
William Newton Morgan, Ohio.
John Franklin Outcalt, Ohio.
Clark Stephenson Pearce, Illinois.
Frank A. Pfouts, Ohio.
Joseph Rockwell Price, Massachusetts.
William John Reid, Ohio.
Charley Dale Richey, Pennsylvania.
Robert Paul Scudder, Ohio.
George Marcellus Shafer, M. D., Ohio.
Charles L. Slutter, Ohio.
Harold Ellsworth Smith, Ohio.
Stephen Clyde Smith, Indiana.
A. Cristie Smyser, Ohio.
William Daniel Snyder, Ohio.
Frank McGee Sparks, Indiana.
John Anson Bering Srofe, Ohio.
Edward Russell Stevenson, Ohio.
William W. Tarr, Ohio.
Benjamin Cackayne Taylor, Ohio.
Herman B. Van Tress, Ohio.
Henry Emanuel Weick, Ohio.
Albert Weiler, Ohio.
John Fred. Werner, Jr. Michigan.
Charles S. Williams, Ohio.
Eugene Frank Winchet, Ohio.

The number of matriculates was 210.

DENTAL DEPARTMENT.—STATE UNIVERSITY OF IOWA.

The Ninth Annual Commencement Exercises of Dental Department of the State University of Iowa, were held at the opera house, Iowa City, Iowa, Monday evening, March 9, 1891.

The Annual address was delivered by William Stevens Perry, D. D., LL. D., Bishop of Iowa, conferring of degrees by the president, Charles A. Schaeffer, Ph. D. on the following named (58) graduates:

R. C. Amrine, Vermont, Ill.	Thomas Gormley, Mt. Vernon.
J. O. Applebee, A. M., Red Oak.	C. L. Girls, Muscatine.
H. O. Allen, Wapello.	James Galway, Potosi, Wis.
C. F. Adams, Independence.	J. E. Hawthorne, Rock Island, Ill.
D. C. Brette, Morrison.	L. C. Hall, Burlington.
G. H. Barker, Jamaica Plain, Mass.	P. R. James, Belmond.
G. H. Belding, Calmar.	C. O. Jerrell, Mt. Pleasant.
E. Bumgardner, Holton, Kan.	L. E. Kaltenbach, Potosi, Wis.
J. W. Billings, Union.	C. E. Laird, Newton.
A. L. Brown, Perry.	J. F. Leigh, Dyersville.
D. J. Brown, Waterloo.	Cora G. Little, Perry.
Frank Ball, Grand Island, Neb.	W. D. McErlain, Dyersville.
N. Burdick, Davenport.	Jas. McNeil, Mason City.
C. D. Bemiss, Spokane Falls, Wash.	W. W. Moorhead, Milan, Ill.
Frank Bickel, Moline, Ill.	G. C. Money, Beaman.
R. S. Bandy, Fairfield.	J. B. Moats, Mt. Morris, Ill.
W. J. Coughlan, Colfax.	C. A. Marshall, Plattsmouth, Neb.
A. L. Currie, Earlville.	A. E. Osburn, B. S., Sumner.
George Cogley, Clarinda.	J. L. Riggs, Castalia.
V. K. Chandler, Perry.	J. M. Raugh, Maxwell.
G. E. Chambers, Bloomington, Wis.	S. B. Reque, Spring Grove, Minn.
W. C. Davis, Oxford.	M. A. Robinson, Maquoketa.
J. W. Downey, M. D., State Center.	W. F. Ryburn, Bloomington, Ill.
S. G. Dowdey, Cherokee.	H. C. Reeves, Lockport, N. Y.
J. B. Ellis, Maquoketa.	C. C. Smith, Lena, Ill.
W. E. Fish, Kellogg.	L. F. Steuerwald, Huron, S. D.
C. A. Fuller, Watertown, N. Y.	M. L. Spencer, Waterloo.
L. L. Foote, Worthington, Minn.	W. C. Schoemaker, Muscatine.
L. S. Forbes, Fayette.	J. P. Von Lackum, Waterloo.

Number of matriculates during the session, 161.

GERMAN-AMERICAN DENTAL COLLEGE.

The second annual commencement exercises of the German-American Dental College were held at the Palace Hotel, Chicago, Wednesday evening, March 11, 1891. The exercises were opened by an address on behalf of the faculty by Dr. Brunhoff, an address by Dr. Ivo Bernauer, who also presented the diplomas to the graduating class, and an address by Dr. G. S. Salomon, who delivered the prizes to the successful graduates. The graduates who received the degree of Doctor of Dental Surgery (14) are:

E. Mueller, Switzerland.	M. Muhlhauser, Germany.
A. Schlegel, Switzerland.	Paul Krause, Germany.
Felix Arendt, Russia.	Max Benedict, Germany.
A. Voegela, Germany.	Edwin Schenk, Germany.
Max Kalbe, Germany.	K. Schumann, Germany.
Karl Schmid, Germany.	Joseph Riel, Germany.
E. Klemick, Germany.	Prof. Brunhoff, Germany.

DEPARTMENT OF DENTISTRY—VANDERBILT UNIVERSITY.

The twelfth annual commencement exercises of the Department of Dentistry of Vanderbilt University were held in the University Chapel, Nashville, Tenn., Wednesday Evening, March 25, 1891. Oration on the past of the class by C. C. Delhommer of Louisiana; charge to the class by Prof. W. H. Morgan. The degrees were conferred by Vice-Chancellor W. F. Tillett, D. D. Number of matriculate, past session, 135. The following named (44) gentlemen received the degree of Doctor of Dental Surgery:

R. L. Allen, Ala.	N. R. Holcomb, N. C.
J. D. Adair, Ala.	Hamet Jordan, Va.
Archie Boales, Ky.	J. D. Killian, Ala.
R. H. Burks, Ky.	R. I. Mills, Ky.
David Combs, Texas.	S. J. Martin, Ky.
Wm. Chapman, Ill.	E. F. Morris, Texas.
Arthur Corbin, Mich.	J. W. Perkins, Ala.
J. E. Combs, Cal.	G. S. Percy, Tenn.
J. G. Cuttiff, Ga.	W. S. Parker, Miss.
W. W. Corley, Ala.	C. W. Patterson, Miss.
B. S. Davis, Miss.	R. A. Rush, Miss.
B. N. Dupree, Ala.	J. D. Smith, Tenn.
J. A. Dale, Ind.	J. D. Stephens, Ala.
C. C. Delhommer, La.	W. E. Swind, Mo.
R. D. Griffis, Texas.	B. F. Storne, S. C.
Manuel Garfias, Mexico.	W. L. Smith, N. Y.
J. M. Graham, Tenn.	Thos. Towles, Ky.
G. H. Hudson, Ala.	J. W. Thomas, Ky.
J. H. Hatcher, Mo.	J. S. Ward, Tenn.
O. P. Hope, Mo.	J. P. Williams, Ga.
L. I. Hallums, Tenn.	G. J. Williams, Texas.
E. F. Hickman, Tenn.	

WESTERN DENTAL COLLEGE.

The first annual commencement exercises of the Western Dental College were held in Music Hall, Kansas City, Mo., March 13, 1891. The faculty address was delivered by Prof. H. S. Lowry, an address by Rev. S. S. Laws, valedictory by Dr. J. H. Cromwell and conferring of degrees by Prof. D. J. McMillen, Dean.

The degree of Doctor of Dental Surgery was conferred on the following named (9) gentlemen:

S. S. Brown, Mo.	C. W. Lukens, Mo.
J. H. Cromwell, Mo.	Frank Nelson, Kans.
B. T. Edmiston, Ark.	J. D. Roy, Mo.
H. B. Heckler, Ohio.	C. J. Sawyer, M. D., Kas.
H. B. Lowry, Ohio.	

The number of matriculates during the session of 1890-1 was sixty-two.

INDIANA DENTAL COLLEGE.

The twelfth annual commencement exercises of the Indiana Dental College, were held at the Propylæum, Indianapolis, on Friday evening, February 27, 1891. The annual address was delivered by Dr. F. M. Ault, of Kokomo, Ind.

Dr. J. N. Hurty presented certificates to the members of the junior class, which will admit them to any dental college in the United States. Dr. S. B.

Brown, president of the college, then conferred the degree of Doctor of Dental Surgery on (40) graduates. Their names are :

O. A. Keiser.	B. D. Curtis.
J. M. Lewis.	M. M. Cook.
L. Lichtewalter.	C. P. Danks.
A. O. McCutcheon.	E. B. Foulds.
Miss. L. B. McCullum.	C. Feigel.
O. F. Overstreet.	Charles G. Hoover.
Otis Palmer.	H. C. Heaton.
B. T. Perkins.	C. B. Hayford.
L. W. Roe.	Wm. Johnson.
Geo. S. Rhea	James B. Jacques.
P. A. Row.	Geo. C. Keel.
Frank Smith.	M. W. Johnson.
Mark Smith.	M. J. Keightly.
O. V. Simmerman.	R. H. Kiser.
Mrs. Hattie G. Scott.	L. J. Stivers.
Elias T. Shields.	C. E. Whitesides.
A. L. Austin.	C. F. Williams.
W. E. Armstrong.	H. M. Zehrung.
Walter S. Beazley.	C. P. Tinkham.
J. M. Brimmacombe.	Maurice Raschig.

KANSAS CITY DENTAL COLLEGE.

The ninth annual commencement exercises of the Kansas City Dental College were held at Grand Avenue M. E. Church, Kansas City, Mo., on Tuesday evening, March 10, 1891. The faculty address was delivered by Prof. W. T. Stark. The degree of Doctor of Dental Surgery was conferred by the President, C. B. Hewitt, D. D. S., on the following named (43) gentlemen :

Wallar Bohannon Austin.	Frank Cummins Kenney.
William Knox Aitken.	Samuel Wilson Kincaid.
Alba Lincoln Ashby.	Paul Jean Laws.
Henry Ernest Baxter.	Charles Bently Lyon.
William Charles Kelly Buchanan.	George Leonard Lewis.
William Prim Baker.	Alfred Horace Mann.
Frederick Grover Corey.	William Barnabas Myers.
Alonzo Tozer Crow.	James Riland McLeland.
Frank James Claypool.	William Henry Ockerman.
Archie Maurice Detrick.	Simpson Ockerman.
Charles Arthur Draper.	Arthur Drew Park.
Rezin Thomas Fowler.	Chester Burns Reed.
Robert Pernell Greenlee.	Harry Elmer Roberts.
Elbert Quincy Gibson.	Albert Orestus Sage.
James Galloway.	Matt Foster Toler.
Harry David Hines.	Winslow Page Upton.
Franklin Groff Hunsicker.	Henry Albert Whitmer.
William Bledsoe Hale.	William Nathan West.
Aaron Lincoln Hitchens.	George Hartsuff Woods.
John David Vincil Kice.	Frank Mitchell Wilson.
Augustine Haynes Kirby.	Oakley Raymond WibKing.
James Thomas Kenney.	

COLUMBIAN UNIVERSITY—DENTAL DEPARTMENT.

The fourth annual commencement exercises of the Dental Department of the Columbian University were held in connection with those of the medical department, at Lincoln Music Hall, Washington, D. C., on Thursday, March 19, 1891,

at 8 P. M. The address to the dental graduates was delivered by R. B. Donaldson, D. D. S., valedictory address by Edmund Barry, M. D. The number of matriculates for the session was nineteen.

The degree of D. D. S. was conferred on the following (2) graduates by President J. C. Walling, LL. D.: Jonathan R. Hagan, of Virginia, and Benjamin F. Odell, D. D. S., of Illinois.

TENNESSEE MEDICAL COLLEGE—DENTAL DEPARTMENT.

The second annual commencement exercises of the Department of Dentistry of the Tennessee Medical College, were held at Staub's Theater, Knoxville, Tenn., on the evening of March 19, 1891. An address was delivered by Rev. R. R. Sutherland, D. D., and the charge to the graduating class was given by Prof. Charles M. Drake. The number of matriculates for the session was eighteen.

The degree of D. D. S. was conferred on the following (7) graduates by Col. E. J. Sanford, President of the Board of Trustees :

R. S. Booth, N. C.	J. K. Moose, N. C.
D. D. Foley, Ky.	T. B. McBride, Penn.
H. F. Henderson, Va.	Wexler Smathers, N. C.
J. A. Keener, Tenn.	

NORTHWESTERN COLLEGE OF DENTAL SURGERY, CHICAGO.

The Eighth Annual Commencement Exercises of the Northwestern College of Dental Surgery were held at the college building, 1203 Wabash avenue, Tuesday evening, March 31, 1891.

The doctorate Address was delivered by Prof. C. G. Buchanan Klophele, M. D. Address by the Dean, Prof. R. W. Clarkson. Conferring of degrees on the following graduates;

James Sampson Goodridge	- - - - -	London, England.
William Savage Milligan,	- - - - -	Philadelphia, Pa.
George Michael Honlihan,	- - - - -	Wisconsin.

HONORARY DEGREE.

Richie DeLan,	- - - - -	Massachusetts.
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Presentation of Medals: These were from Prof. B. Grant Jefferis, M. D., C. M. Senior Class: 1st prize gold medal to James Sampson Goodrich. 2d prize, silver medal to William Savage Milligan. Junior Class: 1st prize, silver medal, George Westcott Michigan. Short addresses by some of the officers, Faculty and Class. Valedictory, William S. Milligan.

PRACTICAL NOTES.

INCIDENTS OF OFFICE PRACTICE.*

By W. E. BAXTER, D. D. S., FRANKFORT, KY.

I have no new theory to advance to you to-night in this brief and hastily written paper, so with your consideration, I will at once proceed to the recital of two cases, which occurred in my individual practice.

* Read before the Kentucky Dental Association.

Case 1.—Miss S., a choir singer, came to consult me in regard to the expediency of having the root of a right, upper, first bicuspid extracted, and a tooth on a plate inserted in its place. The lady dreaded extraction—fearing a plate would injure her vocal powers, or true tone quality of voice with which she had been gifted. We decided to save this if possible, and upon examination, found that decay had obliterated the crown, leaving nothing but the fang and a thin wall of the body of the tooth standing beneath the tumefied gum tissue. The bifurcated fang was intact; the thin wall, above mentioned, had lost its lime salts, and was to some extent pliable. This wall was left standing to hold the soft tissues out of the way. The *debris* was cut and washed out, and an entrance made into the root canals. These were cleansed with broaches and antiseptic washes and filled immediately with gutta-percha. The tumefied gum tissue was disgorged by using the lancet and the patient dismissed. When she returned after the lapse of three days, the gum was found to be in normal condition. The margin was touched with carbolic acid and the wall of decalcified tooth substance carefully removed until solid tooth structure was reached—almost on a line with the root bifurcation. In removing this, great care was taken so that the soft gum tissue was not wounded, as the surrounding gum was to be used as a matrix for an amalgam reproduction of the tooth—as far out as the gum margin—on which a gold crown could find a foundation. Retaining grooves were made in the root canals, after a part of the gutta-percha had been removed, and an alloy filling material mixed and packed gently in place, trimmed with thin bladed instruments to represent a tooth which had been cut off even with the gum margin. To allow the amalgam to harden the patient was dismissed for several hours, when an impression was taken, a model made, and a gold crown struck up and soldered in the usual way, and accurately adjusted over the amalgam reproduction, making in all a substantial piece of work. Result—pleased patient, lavish expenditure of maiden's smiles and a fee that was tempting.

Case 2.—On the morning of March 22d, Mr. N. J. M., member of the State Board of Equalization, called for professional services. The crown of his upper, right lateral incisor had decayed and broken off three-fourths of its length. The patient spoke of having the tooth restored with gold, but I thought this would make an unsightly show in a denture already too prominent; and an operation,

at best, requiring several hours for its completion—so I pronounced a porcelain crown the thing needed.

The tooth contained a live pulp, with a covering of dentine so sensitive as to cause the most excruciating pain upon the slightest touch with an excavator. This hypersensitive condition of dentine was deplored, as I had been waiting for some time for a case upon which to try the "stick method" of driving out a pulp, as I wished to see this for myself, and to be able to give an opinion as to the efficacy of this mode of procedure in the painless extirpation of pulps; but to this, the sensitive dentine was a barrier. A pulp devitalizer or arsenious acid paste was not given two moments' thought, the desire being to complete the operation at one sitting. Happy thought!—A hypodermic syringe was charged with a 4% sol. of muriate of cocaine, and two minims, respectively, injected under the mucous membrane on the labial and lingual side of the fang, equi-distant from neck to apex.

At the expiration of one minute the previously hypersensitive dentine was cut through, and the pulp chamber entered and the pulp bled and then extirpated, and *all of this without the slightest indication of pain*. The serum was allowed to flow, and the canal then carbolized, and the apex filled at once with gutta-percha. The root was then trimmed to about one line beneath the gum margin—this to allow the future pointing of root and crown to be out of sight—and the border of gum touched with carbolic acid to keep the flow of blood and serum back. A Logan Crown of proper color was selected and adapted by the aid of small corundum wheels to make an almost water tight joint with the root. The pin or post of the crown was then barbed its length with a knife blade, and warmed and gutta-percha packed around it to conform as near as possible to the size and shape of the root canal. The root and adjoining parts were kept dry with a napkin and the crown was warmed and pressed in and onto the root, then immediately withdrawn, and the surplus gutta-percha cut off. The crown was again heated, and with a notched stick, pressed firmly into place and cooled slowly, and the gum pressed, with the finger, down and over the point to hide the line of demarkation. The operation was completed at one sitting of an hour and ten minutes' duration.

And now one or two reasons why I think gutta-percha the ideal material for setting crowns. If a root canal is filled or crown mounted with any of the cements, and inflammation supervenes, or

abscessed conditions recur, and it is necessary to remove the crown and filling for treatment, it is impossible to remove without causing great pain; an increase of morbid conditions, or endangering the root in many ways. With gutta-percha these dangers are obviated by simply heating the points of a pair of incisor forceps and applying to the crown, allowing the line of heat to travel from the crown to the metal post, thereby warming the gutta-percha; and then the removal of the crown is accomplished without effort or danger. But if the removal is attempted without previously heating the forceps, there is danger of bringing the fang out with the crown. In some mouths, or in certain conditions of the secretions of the oral cavity, cements will deteriorate or "wash out." These conditions have but very little effect, if any, upon gutta-percha, it lasting where there is no attrition upon it—especially in approximal and marginal cavities—for many years.

One caution in crowning with it: Always warm the porcelain and let the heat travel up the metal post; if the post or pin is heated first its expansion will cause the crown to crack and break. Undercuts or grooves in the root canals are unnecessary, as the gutta-percha *will adhere* if the canal is dry and the proper amount of heat is used.

MEMORANDA

Dr. L. P. Bethel, now lives at Kent, Ohio.

Dr. J. E. Cravens has returned from Europe.

Dr. E. Kargau has gone to Europe for a pleasure trip.

Abscesses and the "Grippe" go hand in hand this spring in Chicago.

Missouri State Dental Association meets at Louisiana, Mo., July 7-10, 1891.

Dr. Henry Lawrence late of New Orleans died recently in Chicago, aged 72 years.

Dr. Ransom Dexter for many years a prominent physician in Chicago, died recently.

According to latest reports, Dr. E. E. Hughes will lose his entire eye which was injured by a piece of salivary calculus.

Dr. James A. Lydston has removed to Denver, Colo. He will devote his attention hereafter to diseases of the eye and ear.

The Alabama State Dental Association is in session at Anniston, Ala., having convened yesterday, continuing in session four days.

The annual meeting of the Post-Graduate Dental Association of the United States will be held in Chicago the latter part of June.

D. D. S comes out in very big type in the springtime, like the leaves of spring, as it were. All honor to those worthily receiving the title.

The *Journal für Zahnheilkunde* continues to refer to the coming World's Columbian Dental Meeting, as the Second International Dental Congress.

The annual meeting of the Southern Minnesota Dental Society will be held at Mankato, April 21, 22 and 23. Resp. yours, E. L. HAWES, Sec.

The unwelcome news comes from Kansas that their imbecile legislators are about to modify the law admitting all to examination to practice, with or without diplomas.

Henkel Dental Chair Company, Chicago, to manufacture dental chairs and appliances; capital stock, \$4,000; incorporators, S. T. Henkel, C. F. Acres and Fred J. Eddy.

At the regular monthly meeting of the Hayden Dental Society of Chicago, held March 16, 1891, Dr. A. W. Freeman read a paper on the "Protection of the Cervical Border."

So, objections are raised to the re-examination of dental graduates by State Boards. How would it do for the boards to examine the candidates for graduation? No trouble there.

The Students' Society of the National Dental Hospital, London, now publish their transactions monthly. We have received the first four numbers. It is a very readable periodical.

The Dental Aid Association has been incorporated in Illinois, after the plan of the Medical Aid Association, incorporators, A. B. Clark, A. B. Freeman, E. A. Royce and others. Capital stock, \$20,000.

Mr. S. J. Hutchinson of London in his annual address to the odontological society recommended the use of oxygen gas in the treatment of septic roots and alveolar abscess, oxygen gas may be had in compressed cylinders.

Dr. John H. Spaulding, of Paris, has made a melancholy visit to his former home in Minneapolis, bringing the remains of his wife to be deposited in her own country. Mrs. Spaulding died March 12, in Paris. Our sincere sympathy is extended in this hour of grief.

Dr. E. E. Hughes, of Des Moines, Iowa, recently met with an accident, on account of which the sympathy of the entire profession will go out to him. In cleaning a set of teeth a piece of loosened tartar flew into one eye, which may possibly result in the loss of the sight of that eye.

Professor Charles T. Parkes, the eminent surgeon, expired of pneumonia Saturday March 28. He was only 48 years of age and had attained a world-wide reputation as a brilliant operator. He will be succeeded in the Rush Medical College by Dr. N. Senn of Milwaukee.

Dr. J. Ward Hall sends us the following, which I wish to remark is a good "noties :"

"NOTIES. Our tooth is a very important organ for human life and countenance as you know; therefore when it is attack by disease or injury, artificial tooth is also very useful. I am engage to the Dentistry and I will make for your purpose. Dentist. D. Takigushi. No. 19, Aioi chio, Ichichiome, Yokohama."

As there is to be a State gathering of Red Men in Bloomington, at the same time when the Illinois State Dental Society meets there, it will be well for those intending to attend the meeting of the society, to engage rooms at the hotels as early as possible. The Windsor Hotel and the Hotel Folsom, are the best hotels in Bloomington.

In copying a model in sand or marble dust, when it is difficult to remove it, and leave a perfect impression on account of under-cuts or any other reason, Dr. A. W. Freeman recommends covering the model with heavy tin foil, the model will be readily withdrawn, leaving the foil in the sand or marble dust, thus enabling one to secure a good copy.

It is said that recent electrical inventions have made everything about dentistry pleasant and painless. It is a pity that some one doesn't invent a device to anæsthetize the lively emotions which one experiences on climbing the stairs to the dentist's office. As a general thing, that part of the experience is as depressing as the sight of the dentist's tools.

Dr. William Witt died March 25, aged 33 years. Dr. Witt was a graduate of the Chicago College of Dental Surgery, class of 1886, and for a short time practiced in Russia, but finding it uncongenial, returned to America and had established a practice in Chicago. He was a member of the Odontographic Society, and was highly esteemed as a man and dentist, in this community.

The virtues of myrtol as a sterilizer, are not fully appreciated. A very foul root, when freshly opened may be packed with a pledget of cotton moistened in myrtol and if properly sealed in the cavity with gutta-percha, through which a small opening is made it may remain for a week, when the root may be cleansed of its contents, which will be found completely sterilized. Try it.

TO THE EDITOR—Dear Sir: The Indiana Dental College Alumni Association held their annual banquet at Indianapolis on Friday, Feb. 27, 1891. After discussing an elaborate menu, the following toasts were responded to: "Our Association," Dr. W. W. Munger, Ft. Wayne; "Our Profession," Dr. S. B. Brown, Ft. Wayne; "Our College," Dr. J. N. Hurty, Indianapolis; "Our Sweethearts and Wives," Dr. A. H. Brown, Aurora; "Our New Members," Dr. O. F. Overstreet, Greencastle. Impromptu talks by Rev. Dr. H. A. Cleveland, Dr. E. S. Elder, Dean of the Medical College of Indiana; Dr. S. E. Earp, Secretary of the College of Physicians and Surgeons; Dr. Van Valzah, of Terre Haute; Dr. Church, of La Porte, and others contributed to the enjoyment of the occasion.

Very truly,

G. E. HUNT, Secretary and Treasurer.

ANOTHER ON THE LIST.

Springfield, Feb. 10th. The Secretary of State to-day issued license for the incorporation of The Marsh Tooth Saving Dental College; capital stock, \$5,000; incorporators, John S. Marsh, James F. May and Harvey A. Taylor.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The Illinois State Board of Dental Examiners will meet at Bloomington, May 11, 1891, for the examination of candidates for license. Any such will present themselves before 2 o'clock P. M. of that day. C. STODDARD SMITH, Sec.

103 State Street, Chicago.

TOOTHACHE ELECTRICALLY CURED.

The most grievous of our minor ills, the toothache, may be sometimes cured and usually alleviated by a weak galvanic current, which can be generated by placing a silver coin on one side of the mouth and a piece of zinc on the other. To increase the effect, rinsing the mouth with acidulated water, will be found efficacious.

NOTES OF THE MISSISSIPPI VALLEY ASSOCIATION.—MARCH, 10, 11, 12, 1891.

Dr. Patrick's eloquence and wit drew the laggards from the lobbies.

Several papers promised months ago, were not forthcoming.

A dental convention seems to be like a base ball club: you must have a ten thousand dollar "beauty" to make it draw.

A novel feature is promised for some future meeting. Dr. Patrick promises to squelch Dr. Betty if he doesn't quit contradicting him.

Drs. Talbot and Patrick were elected honorary members.

Dr. Patrick is the Tom Corwin of the dental profession.

It was a very interesting and profitable meeting. F. W. SAGE.

CHICAGO DENTAL SOCIETY.

At the annual meeting of the Chicago Dental Society, held Tuesday evening, April 7th, 1891, the following officers were elected for the ensuing year: President, Dr. D. M. Cattell; First Vice-President, Dr. J. W. Wassall; Second Vice-President, Dr. E. M. S. Fernandez; Recording Secretary, Dr. L. L. Davis; Corresponding Secretary, Dr. Thos. L. Gilmer; Treasurer, Dr. E. D. Swain; Librarian, Dr. A. W. Harlan. Dr. E. Noyes succeeds himself on the Executive Committee. Board of Censors, Drs. B. S. Palmer, G. J. Dennis, R. M. Paine.

THOS. L. GILMER, Recording Sec'y.

PRELIMINARY NOTICE.

67 WEST NINTH STREET, NEW YORK CITY.—Dear Doctor: The Dental Society of the State of New York will hold its annual meeting at Albany Wednesday and Thursday, May 13th and 14th, 1891. Papers will be read and discussed by distinguished members of our profession, and all things will be done to promote the interests of practical and scientific dentistry. No clinics! No exhibits! Please set aside the above time and do your share to advance the status of dentistry in the Empire State, remembering that the eyes of the dental world are upon us. Yours faithfully, W. W. WALKER, President.

MISSOURI DENTAL COLLEGE ALUMNI.

The annual meeting of the Alumni Association of the Missouri Dental College was held March 12, 1891. Ten new members were elected. Officers for 1891 were elected: President, Dr. W. M. Bartlett; Vice President, Dr. J. H. Prothero; Secretary, Dr. De Courcay Lindsley; Treasurer, Dr. Carl E. Schumacher, Executive Committee, Drs. Bowman, Prosser and Whipple.

During the past year the following Alumni have been lost by death: Drs. Homer Judd, M. D. La Croix, John W. Forden and Henry D. Field. A committee was appointed to draft suitable resolutions.

THE STOMATOLOGICAL CLUB, BUFFALO, N. Y.

This is a society composed of dentists and physicians organized for the purpose of studying the pathology of the oral cavity, comparative anatomy, and such kindred scientific subjects. Its regulations provide that while professional ques-

tions and matters of practice shall not be entirely excluded, their consideration shall not be the main object for meeting, but shall be held subordinate. During the past winter the time has been principally devoted to the study of oral bacteriology. The club is an affiliated body of the Buffalo Academy of Natural Sciences, its meetings are held in the building of the academy, and the collections of that society are used for objects of study and illustration. The membership is not confined to the city of Buffalo, nor to the dental profession. The officers are, President, W. C. Barrett; Vice-Pres, A. P. Southwick; Sec-Treas, H. A. Birdsall; Curator, M. B. Straight; Advisory Council, S. Eschelmann, J. Edward Line, F. W. Low. H. A. BIRDSALL, M. D. Sec.

DIED LAUGHING.—DR. CUNO DIX EXPIRES IN ENJOYMENT OF THE WIT OF A GERMAN COMIC PAPER.

NEW YORK, Jan. 22.—A well-known face for many years at Himmelsbach's reading-room, adjoining his saloon at 955 Third avenue, was Dr. Cuno Dix, a dentist of 355 East Forty-ninth street. Last Sunday he sat at one of the tables reading the *Fliegende Blätter*. While he was laughing at one of the humorous illustrations his head fell back and he gasped once or twice and died. He was dead before his friends, who were all around him talking and laughing, knew that anything had happened. He was a physician by education and was an exile of '48. He came to New York in the same vessel with Carl Schurz. He was employed by the Union Pacific Railroad Company several years. He leaves a widow and four children. His funeral was directed at the club house by the Arion Society, of which he was a member. The body will be cremated at Fresh Pond.

"TO (TOO?) MUCH POWER IN THE HANDS OF A FEW MEN."

A circular with the above title, and signed C. Franklin Hartt, D. D. S., 103 State St., Chicago, in opposition to any changes in the dental law of Illinois, has been lately circulated among dentists. It opens with a demagogue's plea for poverty, as follows: "Certain interested dentists are always running down to Springfield to procure more class legislation. Now that they are in the ring they want the walls put up so high that only rich men's sons will be able to get over." * * * Does the gentleman mean that an impartial examination of all candidates for practice, whether graduates or not, by a State Board of Examiners, constitutes a higher standard of qualifications than is necessary to insure the competence of all the men entering the profession? or than can be attained by the diligent use of the opportunities afforded by any *good* dental college during the three years of study now required? (It appears to be as necessary for poor men to go through the three years of study as for rich ones), or will he contend boldly that incompetent men should have permission of the State authority to mutilate teeth or kill patients if they are only too poor to obtain proper qualifications to practice dentistry or medicine. It is an outrageous piece of impudence to bring the question of poverty or wealth into the consideration of such matters. It will be a long and difficult task to bring the standards of requirements and the methods of determining qualifications up to such a plane as to render it sure that the great majority of men entering the professions are fitted to practice safely and usefully. Until that has been accomplished and fictitious, unnecessary or expensive requirements begin to be imposed in addition, the plea for poverty is wholly out of place and is only used with the demagogue's purpose of catching a few votes.

The circular goes on, "any liberal minded, uninterested man in the profession would say, 'we already have a good Dental Law, so why not let well enough alone.' " The answer to that is, the present law is not good, being notoriously inadequate, lacking in any provision for its enforcement against illegal practitioners, and consequently becoming each year more nearly a dead letter, which furnishes the only plausible reason we can think of why the quack dentists, and some of the colleges are so well contented with it as it is.

The present law, (and others of similar character), has had one good effect, namely, to force nearly all students through the colleges instead of entering the profession through a private pupilage. The natural result has followed, and the rather large proportion of students who formerly sought the quickest and easiest way in, through the offices of quacks or incompetents, now furnish a lively demand for quack or incompetent colleges, which is being so abundantly supplied that the resulting evils threaten to become second only to the former ones. Two methods suggest themselves for the restraint of these evils. The present law imposes the duty upon the State Board of Examiners to determine the "reputability" of dental colleges, which has proved to be a task second only in difficulty to what they would find if the law required them, instead of *examining* candidates coming to them without diplomas, to make inquiry as to the reputability of their preceptors, the amount and character of the instruction they had received and the time spent in pupilage. The only direct and adequate method is the same in one case as the other, namely, the proper and impartial examination of all candidates.

It is to be expected that quack colleges and incompetent ones should oppose such a change in the law, just as it was that the same classes of practitioners would oppose any law at all; but the most astonishing development in this connection has been the opposition of some of the best colleges, who would be sure to be greatly benefited by it. It has been intimated that some of them are now willing to cease their opposition provided there can be added to the law a requirement that all candidates for practice must have a diploma to make them eligible for examination by the State Board. Such a requirement is well enough in itself, but would probably defeat any legislation at all for the present. (Is that the reason why it is being insisted upon so strenuously?) Such a demand is very much like a millionaire asking for a hundred dollars to add to his fortune. The present law has filled the colleges with students, the vast majority of whom find it easier, quicker and cheaper, to get a diploma in a college than to fit themselves outside of it for the examinations by the State Boards. If the changes proposed are made, the same reasons will continue to produce the same results, only the students will feel obliged to choose a college whose course of instruction is thorough enough to qualify them to pass the final test by the State authorities. It is not in the least likely that the proportion would be increased of those who would seek to pass the State examinations without a college diploma.

The circular closes with a protest against the proposition for an annual registry of dentists, and the payment of a small fee therefor. This is the least important of the proposed changes, and may possibly be open to some reasonable objection, though it would seem as if the annual payment of fifty cents or a dollar could not prove a very heavy burden upon any one or any more annoyance than the payment of annual society dues or the subscriptions to dental journals. The advantage of it with reference to the enforcement of the law would be important,

in that it would furnish ready and certain means by which to identify all legal practitioners, and consequently, all *illegal* ones, for the list could readily be sent to every dentist in the State each year. It would also furnish some revenue above the cost of the registry, which would help toward the necessary expense of enforcing the law. It would seem as if the amount named would not be too large a contribution from each practitioner toward keeping out unqualified men and maintaining the proper legal standing of the profession. E. NOYES.

Since writing the above, another circular has been received, having the same signature, in which the gentleman commends the Dental Legal Association, now being formed, and proceeds to give it some advice as to what it should do and should not do. "It should be the constant endeavor of the Dental Legal Association to find out what the desires and wishes of the rank and file of the dentists in the State are, ————; let us throw off the yoke of one-man power, that has so long been dominant in our ranks." We greatly desire to be informed who the one man is who has long been so dominant over the dentists of Illinois as to justify the statement that we are all under his yoke? As to finding out the wishes of the dentists in the State, it will be remembered by most that two years ago a committee of the Illinois State Dental Society made the most thorough and laborious efforts to ascertain the opinions of the members of the profession throughout the State, in respect to the changes desirable to be made in the dental law and framed the amendments then proposed, after hearing from all who took interest enough in the matter to reply to their request. The circular continues as follows: "The D. L. A. should not allow itself to be captured by any State Board, neither should it be influenced by college men, or any interested parties." "If a new dental law is needed let the D. L. A. frame it, and the mass of the profession approve it. When I say profession, I do not mean a little clique of self admirators who with brazen effrontery claim that they represent dentistry in Illinois." With the greatest good-will toward the Dental Legal Association, and the heartiest desire for its success and usefulness, let us say that if it desired to "frame" any dental law for this legislature to act upon, it should have had its work done and sent its bill down to Springfield two or three months ago. (It would be well for the writer of the circular to remember that epithets are cheap, and that it would be just as easy and more appropriate to say "clique," and "brazen effrontery in claiming to represent dentistry in Illinois," in respect to him and those he represents.) In such matters as this, men do not represent their profession by force of numbers or volume of breath, but by such wisdom, good sense and sound judgment, as may cause the measures they propose to meet the approval of thoughtful, wise and unprejudiced men generally. It is very unfortunate, that when the men whose official position, experience, and unselfish public spirit have best fitted for the work, have spent laborious months and years in preparing the wisest law that their own judgment and a careful comparison of the laws of other States and the opinions of the best men they can find opportunity to consult with, enable them to frame, it appears to be in the power of a very few men, who had done nothing constructively, to come in at the end and demolish everything that has been accomplished. The circulars are very mischievous also, in that they are calculated to arouse personal antagonisms and increase the tendency, always too great, to separate the profession into opposing cliques and parties, instead of making reasonable objections

to the legislation proposed, or what would be much more to the point, stating clearly what legislation the writer does believe to be desirable.

One thing more should not be passed by: "Let us lay aside ethics and everything else, and meet on common ground." This we must protest against. Ethics means truth, justice and morality, everything we include as essential to upright character and conduct; good men never intentionally lay these aside, and whenever they do, we see exhibitions of selfishness, jealousy, or meanness that make us wish that they would hurry and take them up again.

E. NOYES.

OBITUARY.

W. H. ATKINSON, M. D., D. D. S., NEW YORK.

"Better is the day of one's death, than of one's birth."

A great soul has journeyed from the cradle to the grave. It had more than an ordinary endowment. It came into this life with a large portion of the spirit of the Master. He was sent on a mission. He has fulfilled it. Others before him, it may be truly said, had broken the soil, yet he, by his large fraternal nature, mellowed the soil, sowed the seed and so fulfilled the divine command.

He has sown lavishly beside all waters, and it will continue to bear fruit, even after many days. He was instant in season and out of season. At first he spoke above the understanding of ordinary man. Now that the curtain which often obscures the real life is drawn, we may know him better. Yet while we loved him here, we will in the future cherish his memory more. We can only best manifest our appreciation of him by following his example in earnest endeavor for the elevation of our calling. When he adopted it, it was but a trade; he has so magnified it that he has left it a profession. We will honor him, for he has honored our calling. In a large sense he has laid down his life for his brother. No one worthy or unworthy appealed to him in trouble but found a benevolent response. He has often said to us, "I would rather give too much than too little."

Truly he was a man of sorrows and acquainted with grief. He struggled with the vim of a jehu but the odds were against him and on Monday, March 30th, he turned his face toward the promised land, and with the eye of a patriarch he was permitted to behold it. There was no uncertainty for him. Death had no sting, victory was complete; like an infant on the breast of its mother, he slept in Jesus. At six P. M. Thursday, April 2d, our beloved Atkinson was immortal. He was not, the angels took him.

This is not the time or place to eulogize the life of such a man. Already it has been shown conclusively that there is a scientific explanation of why we are, and what we are. We think it was Monsieur Taine, of France who has shed much light on this subject. There is a reason why Dr. Atkinson was so markedly endowed above his fellows and above all the others of a large family. His father was a frontier Methodist minister, his mother a Quakeress of an angelic type. From such a parentage came the attributes which he has so often manifested, now the father, then the mother, nature; and over these presided a powerful religious influence, to which he commonly referred as the source of his knowledge, calling it "the angels." This influence which was so potent a guide in all his

papers and most of his addresses was, we think, more manifest to those who studied and gave to them more than the ordinary thought. To say that he will be more than missed among us is putting it mildly; he will be almost lamented. Yet we have had his fruitful instructions and they will forever remain with us. There can never be another Atkinson, yet the seed which he has shown will spring up in the lives of many, and in this connection he will live in a much larger sense. Much that he said has not been unfolded to the general understanding, yet it had a meaning, which will in time, be more and more applied to that which is eminently practical.

Time and space will only allow us to hint at the value of such a character to a chosen calling. Let us quicken our energies for all that is advanced; and if perchance in the coming days we do something of an enduring remembrance we may know that we have done that which stimulates, encourages and guides the earnest student in pursuit of knowledge. In this terminated career there is no cause for mourning. Let us all turn our thoughts in gratitude to the giver of such a life to us, and apply ourselves in fraternal co-operation to all that commands our attention. Dr. Wm. H. Atkinson's voice is hushed; the life he lived in the flesh has ceased; the hidden life will now become more apparent. *Requiescat in pace.*

GEO. A. MILLS.

DR. EDGAR R. E. CARPENTER.

The subject of this notice was born at Providence, R. I., May 4, 1832, and died after a weeks illness of pneumonia brought on by "La Grippe" at the Tremont House, Chicago, March, 20, 1891. Dr. Carpenter was of a good family being a lineal descendent of Ben. Franklin. His father dying when he was but three years old, Edgar was adopted by an elder brother, Wm. V., a surgeon, resident in Toronto, Canada, and Professor in King's College. In this city his school days were spent, while assisting his brother in occasional operations upon the teeth a taste for dental surgery was inculcated as early as the eleventh year. When he was sixteen his brother settled in Chicago and had a drug store in connection with his general practice, and Edgar continued to perform dental operations for several years. Afterward he removed to Joliet, Ill., establishing a dental practice there and at Peru. While living there he was married to Miss Emma Rathbone of Grand Rapids, a highly cultivated daughter of a wealthy family. She, with two daughters, Annie and Nora and a son Elliott R. who is a member of the graduating class in the Dental Department of the University of Pennsylvania, survive him. In 1859 or '60 Dr. Carpenter opened an office in Chicago where he practiced most of the time until 1886. In that year he was obliged to go to Montana for his health. There his time was divided between profession and business. Some of his ventures in real estate showing a commercial shrewdness rare in a professional man. His practice in Chicago was among the best class of people and highly remunerative. He was a man who deservedly commanded a large fee. He was known among dentists as an exceptionally brilliant operator. He did not work in the common groove but according to his own ideas. His was a large and forceful nature—one which drew to him a host of steadfast and admiring friends.

ADOLF PETERMANN, D. D. S.

Died, at Karlsruhe, Germany, February 5, 1891, of Bright's disease, Adolf Petermann, D.D.S., in the forty-first year of his age. Dr. Petermann was born at Frankfurt-am-Main, Germany, August 28, 1850. He came to America and graduated in the class of 1869 from the Philadelphia Dental College.

Dr. Petermann was appointed dentist to the courts of the Duke of Nassau (now Grand Duke of Luxembourg), the Landgrave of Hesse, and the Prince of Hohenzollern. He published the "Zahnärztlicher Almanach," a statistical work having special reference to the interests of German and American graduates practicing in Germany. He was secretary to the Zahnärztlicher Verein zu Frankfurt-am-Main, and a member of many German and foreign scientific societies.

THE DENTAL REVIEW.

VOL. V.

CHICAGO, MAY 15, 1891.

No. 5.

ORIGINAL COMMUNICATIONS.

LIGHT.*

BY TRUMAN W. BROPHY, M. D. D. D. S., CHICAGO, ILL.

In presenting a paper to you this evening on the subject of light, I feel that I may to some extent correct what I believe to be a very grave error, as to its use, under which many members of our profession are unconsciously laboring.

We will consider the sources of light, its physical properties and its application to the dentist's use, and perhaps incidentally refer to some of the various applications of the term to other than illuminating bodies and the phenomena produced by them.

"Light may be defined as any effect on the sense of sight."

It is that state of things in which objects are or become visible ; the physical conditions or phenomena determining the visibility of objects ; the phenomena constituting day.

"Light is said to be the vibrations which, by their action on the retina, render visible the objects from which they proceed."

Light is more than this ; it not only renders visible the objects from which its vibrations proceed, but it illuminates other objects upon which its rays are projected and making an impression on the macula lutea conveys to the brain, through the medium of the optic nerve, a knowledge of the forms and colors of images within the visual field.

* Read before the Odontological Society of Chicago, Ill.

There are two theories of propagation of light. The first or *corpuscular theory*, although supported by such eminent scientists as Sir Isaac Newton, Marquis De Laplace and Jean Baptiste Biot, has been superseded by the *undulatory theory*.

When we remember that light moves at a rate of nearly 200,000 miles per second and is transmitted from the sun to the earth, a distance from 92,000,000 to 93,000,000 miles, in less than eight minutes, the cause for renouncing the corpuscular theory of its dissemination seems quite apparent, as transit of corpuscles at that degree of speed would be impossible.

The undulatory theory assumes that there is everywhere an elastic medium known under the name of luminiferous ether, the vibrations of which constitute light, and when these vibrations come in contact with the retina constitute vision.

There is an agitation of the particles but not a transmission. The vibrations are regarded not unlike those of the atmosphere by which sound is produced and conveyed from place to place.

The mysterious influence of light, not only upon the animal but the vegetable kingdom, constitutes a study full of interesting detail, and instructive in a measure scarcely equalled in physiological research.

Light, and its associate, heat, are essential to the maintenance of life.

Heat takes precedence over light, but without light the plant will lose its chloroform, its circulation will become feeble and its reproductive powers impaired if not absolutely destroyed. Without light the red blood corpuscles become abnormally flattened and deficient in hæmatin, the face becomes pallid and anæmia ensues.

The absence of light is destructive to physiological processes in both animals and vegetables.

Experiments have demonstrated that "tadpoles were prevented from undergoing their usual development into frogs by being secluded from light."

The influence of light stimulates the cerebrum and promotes mental activity. The most casual observer has noted the contrast between the mental and physical exhilaration which is induced by bright clear weather and the despondency of mind and physical depression due to protracted dark, cloudy weather.

Light is a stimulant; it has a tonic effect upon the system, while darkness lowers vitality and exerts a sedative influence.

To consider in a most cursory manner the action of light in chemical experimentation and its application in photography would constitute in itself a volume.

Light not only acts as an important factor in the organization and development of vital bodies, but it is also an active agent in chemical synthesis and analysis. It is a well-known fact that certain remedial agents undergo decomposition when exposed to rays of light.

Light enables the plant to appropriate dormant organic and inorganic matter from the air and soil, and by so doing vivify it, and thus prepare it as food for man and the lower animals.

The metamorphosis of crude elements therefore into all articles for the sustenance of animal life is dependent in no small degree upon the salutary influence of light.

The tropical and semi-tropical countries exhibit in a most unmistakable manner the influence exerted by light, in the elaborate development of plants, flowers and trees whose luxurious foliage bespeaks in no uncertain language its activity in promoting the development of vegetation.

“Light exercises a powerful influence over the functions of the human economy, either organic, chemical, mechanical or dynamical, and hence necessarily over the vegetable, animal and psychical life inclusive: This is seen in the potent influence which it exerts in causing the chemical changes essential to the production of the organic compounds for nutritive purposes; in the promotion of the formative and retrogressive metamorphoses; in giving color to the various organic liquids and solids; in aiding depuration; in exciting the senses and general nervous and muscular system; in stimulating the brain, and in promoting the healthy development, vigor and activity of the whole organism.

While conversely, it is also exhibited in the fact that its absence or darkness retards or entirely suspends development and the various processes of life, and thus diminishes or checks the activity of the organic, chemical, mechanical and dynamical functions of the animal economy.

Proof of this is afforded in the imperfect or non-development of plants and animals, and of man especially; in the impairment of general nutrition, disintegration and depuration; in the torpidity of the brain and nervous system, and in the consequent inactivity of the body, dullness of the senses, inertia and even gloominess

of the mind, with more or less stupidity and disposition to sleep.

The stimulant influence of light and the sedative influence of darkness, are in fact so well known as to have given rise to the common practice of excluding the light in the treatment of various forms of disease, those of the brain and nervous system especially, to thus diminish excitement, allay irritation, induce composure and quietude, and promote sleep.

Light is a compound, and when analyzed is found to be composed of four elements—photogenic, calorific, actinic and colorific rays. The influence of light is then fourfold. These rays may act independently or in connection with one another. It has been repeatedly demonstrated that the calorific ray of the sun exerts a healthful influence upon animal and vegetable life, incomparable with heat emanating from other sources. The influence of the colorific ray in imparting color to animals and plants has been previously referred to in this paper, but reference to cellar plants and closely housed people will vividly portray the effect of the absence of this indispensable element of light.

The function of the actinic ray is to produce chemical changes, and its influence on organic as well as inorganic matter is manifested by promoting metamorphoses, so essential in the development of animals and plants.

The sources of light are numerous, but its great natural fountain is the sun.

Other planets are active also as luminous bodies ; besides light may have its origin from mechanical, chemical, organic and dynamical action.

The application of light to our purpose as practitioners of dentistry, should be considered from two standpoints, each is equally important with the other.

First—its management in the performance of operations in the operating room, and its uses in the laboratory.

Second—its influence in promoting health.

The first phase of the question, I am aware, has received some attention, and a wide diversity of opinion has been elicited during its discussion.

We must keep in mind the fact that rays of light, as projected from their source, are straight or slightly undulatory.

It is, in my opinion, very desirable that these rays be brought

to bear upon the part to be operated upon, in as straight a line as possible.

We may perform our operations on the teeth more successfully, with greater facility and ease to both ourselves and patients, by applying direct rays of sunlight to them.

The dental operating room, instead of being selected with great care as to its arrangement for receiving light, is too frequently poorly lighted, poorly ventilated and deficient in many conveniences seemingly indispensable.

The operating room should be lighted from the south by *one window only*. It is, I believe, a very great mistake to admit light to an operating room through windows opening in different directions. Light from an octagon front or, more objectionable still, a cross light, as from a south window and an east window, should be avoided. Refracted rays, thus employed, impair the focusing power of the eye, and vision becomes disturbed, the eyes weary, eye strain follows, headaches are frequent and sometimes almost constant; other nervous maladies are observed and the general health of the dentist, in consequence of badly arranged light, may irreparably suffer. The paper on the wall of the operating room should be dark, preferably drab, so as to absorb light and not reflect it; this I regard as essential not only for the purpose of preserving the eyes, but the operation is better lighted and therefore may be more perfectly performed.

Light admitted to the operating room may be deficient or excessive in quantity.

A window facing the south from forty to sixty inches in width and from seven to nine feet high, with glass set on a line with the outer surface on the wall of the building, with no shadow cast upon it from buildings on the opposite side of the street, or trees, affords us the most satisfactory light obtainable. By the use of white and dark shades arranged so as to be adjustable to any part of the window we may tone the light as we desire.

No more light is required in an operating room for one operator than a window such as has been described; it is usually necessary to adjust the shades so as to darken a portion of the window to get the best effect.

Ground glass may add to the value of the window, but never having used it I am not prepared to express an opinion as to its merits.

The operating room should not receive a *glaring* light. *Glare* taxes the eyes and leads to visual disorders.

It has been frequently recommended that a sky-light be employed for the laboratory ; while the soft light from the sky-light may be quite satisfactory to the performance of laboratory work, I believe the prosthetic dentist should not occupy a room from which the sun's rays are excluded.

Artificial light in the operating room should be employed only for diagnostic purposes. The light of day only should be used for the filling of teeth. It may be possible in favorable cases to fill a tooth well by artificial light, but no dentist can afford to tax his health and strain his eyes in so doing ; moreover, the color of objects can not be absolutely determined by any other than day-light with one exception.

"The light from the burning of magnesium alone brings out the various colors, both natural and artificial, in the same hues as they appear by daylight."

Magnesium, however, is rarely, if ever used by the dentist for illuminating purposes. In the preparation of cavities, in removing of carious fissures and poorly organized tooth substance, in consequence of the operator's inability to distinguish normal from abnormal colors of enamel and dentine, even if the question of health is wholly ignored, ought in itself to be a sufficient reason for refusing to employ artificial light in the performance of dental operations.

The employment of electricity as an illuminating agent has placed at our command a most valuable adjunct to operative dentistry.

Mention of the use of electric lights for oral examinations was made in 1866 before the Paris Surgical Society.

"Prof. Burns, of Breslau, exhibited a new instrument to be termed the stomatoscope. A platinum spiral wire (inclosed in a boxwood cup, to prevent the transmission of heat) brought to a red heat by the passage of an electric current from two of Middeldorp's elements, is placed in the mouth behind the teeth.

The light reflected by a very small mirror is sufficiently intense to render the jaw transparent so as to allow of the vessels proceeding to the roots of the teeth, the smallest speck of caries, etc., becoming visible.

By reason of the transparency, even the labial coronary artery

may in some subjects be seen at the level of the commissure and its course followed. The instrument is therefore likely to form a useful means of exploration in dental affections." This description of the electric mouth light, twenty-four years ago, while read by many, was little regarded, but the prediction that it would be useful for diagnostic purposes has been amply verified.

The value of the laryngoscope in making examinations of the mouth, nares, throat and antrum I regard very highly. By its use more satisfactory examinations may be made than by daylight.

I am fully aware that many dentists have pursued a course during a long and successful practice quite the reverse, in some respects, from the one I have herein outlined, and by virtue of their rare constitutions are living, vigorous specimens of sturdy manhood. I am also well aware that an insufficiency of light has enfeebled many of our confrères, and its improper use has induced visual derangements which the skill of the ophthalmologist and time can never efface.

Poorly arranged light and over taxation of the eyes in consequence thereof, not infrequently leads to eye strain of a serious type. No occupation calls for closer ocular application than the practice of operative dentistry. Intense application of the eyes is demanded of the dentist in full practice and whoever neglects to employ every means obtainable to preserve his eyes, as far as possible in the full performance of their function does himself, though perhaps inadvertently, a great injustice.

The eyes should be watched closely. "Nervous exhaustion manifests itself in different ways in different individuals. In one person it will manifest itself as frequent headache, in another it will cause pain in the back, in the throat, in the stomach, in the ovaries, or any other form of neuralgia; in a third patient it will be dyspepsia, or constipation; in another vertigo and unsteady gait; in fact there is none of the many functional nervous disorders, from simple headache to epilepsy, which has not been found to have its origin in this form of eye strain."

"After a longer or shorter period, the vision becomes unsteady, one second being distinct and the next second indistinct; then pain is experienced in the eyes or orbital region, or all over the head; in some instances a general feeling of weariness and fatigue overcomes the patient, and in other instances the patient is seized with nausea, dizziness, vomiting, palpitation and other symptoms which

may occasion the belief that he is suffering from some serious cerebral affection or heart disease."

The foregoing quotation is offered in proof of the statement I have frequently made at dental meetings, that overtaxation of the eyes may be the cause of many of the maladies to which dentists are subject and which are due in a great measure to poorly adjusted light, and consequent straining of the eyes. I would suggest that members of our profession who may be suffering from any of the affections herein named, employ a competent oculist and have their eyes examined critically and have suitable glasses adjusted or other remedies employed if need be, by which the difficulty may be corrected.

Another phase of light which I have not discussed is that which comes with the acquisition of knowledge.

"Light, true light, in the mind is, or can be nothing else but the evidence of the truth of any proposition."

In places, here and there, upon the pages of my manuscript, shadows may have fallen; the subject of the paper is before you, so then let me ask you to turn on the light.

DEVELOPMENT OF THE TEETH.*

BY GEO. H. McCausey, JANESVILLE, WISCONSIN.

Among the whole number of the physicians of the United States of America, it is quite safe to say that, not one in every hundred, is in the least familiar with the embryology of the mammalia. It is no less a fact that, not one in every hundred of the dentists of the United States, is familiar with the embryology of the mammalian tooth. It is not many years since the time when the average dentist esteemed the tooth enamel as consisting of a mineral substance only, and amounting simply to a coat of mail. The dentine was at the same time regarded as merely one form of bone, the cementum being esteemed as much the same tissue in its structure. The pulp was almost invariably called "the nerve," and for the reason that its histology and function was imperfectly understood. For a like reason the peridental membrane was termed the periosteum, and the process through which all tooth tissues are created was, in general, quite imperfectly understood.

*Read before the Northern Illinois Dental Society.

It is not the object of the author of this paper to consider the subject of embryology in its broad sense to any great extent, but to show so far as may be possible, the process through which nature creates the teeth as well as the process of the formation of the machinery of the creation. If, at the forty-fifth day of intra-uterine life, we make a section vertically through the jaw of an embryo, we can commence a study of the process of the genesis and development of the dental follicle. Such study involves first, a thorough study of that tissue known as the epithelium of the jaw. While it is to be hoped that all present are familiar with its histology, it may not be out of place that a minute description of the tissue be given. The epithelium includes all that tissue which, commencing at the transitional portion of the lips, forms a lining to the entire alimentary canal, and also lines all closed cavities of the animal body. That being the fact, it of course implies that the covering, or integument of the jaws, consists of that tissue. The surface of the epithelium of the adult jaw, consists of a number of layers of laminated cells, superimposed the one layer upon the other. They consist of the very oldest cells of the tissue; those which have served their purpose and have become dead. They simply serve as a protection to the subjacent cells, and which have not yet ceased to perform their vital functions.

It is proper to mention at this time that the layer spoken of is by histologists termed the corneous or horny layer of the epithelium. The subjacent layer to the corneous will be found to consist of cells of a variety of shapes. Those in immediate contact with the corneous layer will be found to resemble to an extent the cells of that layer, inasmuch as they are somewhat in a flattened condition, and for the most part show no nuclei. They are cells which have nearly ceased to perform their vital functions, and represent a transitional stage in progression in a direction toward old age. As we further examine the tissue in a direction downward, we find the cells changing their shape, and approaching the form of a mosaic pavement. The upper portion of this pavement consists of cells in shape nearly cuboidal, but as we examine those deeper down, they will be found assuming a form to a greater or less extent polyhedral. They will on close examination be found to be furnished with spines or thorns at their periphery, and are generally characterized as the imbricated cells of the epithelium. Progressing in a direction further downward from the surface, we

find the polyhedral cells to be separated from the underlying tissue by yet another layer of cells, and which are of a columnar or prismatic shape, their apices in an immediate contact with the superimposed imbricated cells.

Thus far we have been engaged in a consideration of four layers of cells: first the corneous, next the transitional, third the polyhedral, and fourth the columnar. Together these different layers form what is known as the Malpighian stratum of the epithelium. A very close examination of the columnar cells reveals the fact that their bases rest upon an extremely delicate membrane, and which is known as the basement membrane. This very tenuous membrane serves to separate the Malpighian stratum from the underlying tissue, of which we will now make a study.

It is that tissue which constitutes the true skin, and serves as a stroma or basis substance in which rests the nerve terminals, and vascular loops. As the epithelium of the jaw is not very sensitive to outward impressions, it is quite evident that the nerve terminals are few in number in comparison with some other tissues. It will be observed that the Malpighian stratum contains neither vascular loops or nerve terminals, it merely existing for the protection of the true skin. An examination of a section of the true skin shows the upper surface to be composed of numerous papillæ, giving it a serrated or saw-like appearance. It is the papillary portion which contains the vascular loops, and the nerve terminals. The structure of the true skin is made up of tough bundles of connective tissues fibers, and below the true skin, we find a layer which in some respects resembles the true skin, save that its structure is less strongly connected, being more open and loosely held together. We have taken a somewhat hasty glance at the strata composing the epithelium of the jaws, namely: first, the Malpighian stratum, consisting of four layers of cells, each layer composed of cells characteristic of itself, and, for the purpose of avoiding confusion, we will term this stratum the epidermis or the epidermal portion of the epithelium. We next considered the histological features of the true skin, and which for convenience we will term the dermis, or that portion of the epithelium which answers to the true skin. The third and lower layers, together with the papillary and Malpighian strata, constitute in their entirety, the epithelium of the jaw. We have been somewhat particular in our study of the three epithelial strata, for the reason that a perfect understanding of their

histological features is necessary to a thorough understanding of what is to follow.

We will now take a glance at the foetal jaw, its genesis, and also its partial development. It may not be out of place at this time to speak a few words in a general way, of the embryology of the mammalia, and all vertebrate animals. The animal is created primarily, from a single cell, which, after fertilization, commences a rapid proliferation of cells through the process of segmentation. It results in the production of that variety of tissue which the histologist terms mucous tissue. It is essentially an embryonal tissue, and is that from which arises all the tissues of the adult organism. It is a tissue of which, however, little remains in the adult body, except in the vitreous body of the eye, and in tooth pulp, where it exists in a form slightly modified.

After this digression, we return to the subject of the embryonal jaw. If we examine a human embryo of about fifteen days, we will notice on either side of the head (at a little in front of the point where, later on, the ears are located) two processes which, being further produced, finally meet and become joined, thus forming the embryonal matrix of the lower jaw. At the same time, and from a point slightly above, are produced two other "buds," which, although growing in a direction forward, never come together. These finally constitute the embryonal matrix of that portion of the upper jaw, which afterward serves to include the cuspids, bi-cuspids, and the molars of adult life. Although these matrices are not sufficiently produced to meet in front, yet they do finally join in such a manner that they form the greater portion of the roof of the mouth, leaving a space in front to be filled by other means. At the time that the matrices of the superior maxillary bones are forming, there arises from that portion of the head which finally becomes the forehead, a third pair of processes, which, growing in a downward direction, constitute what is known as the inter-maxillary portion of the superior maxilla, and which afterward include the superior incisor teeth. The union of the several portions of the jaws takes place at about the twenty-eighth day, and after a time, the process of ossification commences. As we remember, all the elements of the embryo consist of mucous tissue; therefore the matrix of the embryonal lower jaw consisting of that tissue, would be unable to retain its shape, were it not for the fact that nature anticipates, and makes provision for increasing its strength. Not long after

the union of the maxillary processes at the median line, there appears within the mucous matrix, a thread-like cartilagenous structure, and which occupies the center of the mass representing the jaw. This new element is called Meckel's Cartilage, from the anatomist who described it. It extends from the malleus of one ear, to that of the other, and the object of its creation is, apparently, that of producing in the lower jaw, a sufficient rigidity for the retention of its proper shape. It consists of two portions, either of which arises in the malleus of the ear, and each produced until they meet at the median line of the jaw. It makes its appearance at about the twenty-fifth day, and gradually disappears with a rapidity proportionate with the calcification of the jaw, and malleus of the ear. Calcification of the jaw commences at about the thirty-fifth day of intra-uterine existence, and is first distinguished at points about equally distant between the ramus of the jaw, and its symphysis. The calcification progresses from these points both posteriorly and anteriorly, and following the cartilage of Meckel, but without uniting with it, until at about the sixteenth day of gestation, an imperfect miniature jaw bone has been formed and the cartilage has been surrounded by the products of calcification.

Having made this reference to the embryonal jaws, we now return to the subject of the maxillary epithelium, but in an embryonal form. If, at about the fortieth or forty-fifth day of intra-uterine life, we make a section vertically through the jaw (and which is soon after the maxillary arches have been formed), we shall see in that portion which is afterward to constitute the alveolar border, an aggregation of epithelial cells, and which form a slight ridge. This ridge is often composed of an epithelial formation, consisting of but few cells in rows, superimposed upon each other, and cases have been known where it consisted of but a single row. Immediately below, the jaw yet consists of its embryonal elements, except perhaps blood vessels or nerves, in an elementary state of developement. It will be noticed that this ridge, consisting of epithelial elements, presents a rounded surface, and was termed by Kolliker, the maxillary rampart. If at this time we examine the maxillary rampart, it will be found that a certain portion projects in a downward direction, into the tissue of the jaw. It will be found to have assumed the form of the letter V, or nearly so, and it will be noticed that it has a slight curve in the direction of the lingual aspect of the jaw, giving it a concaved shape, while

the outer aspect shows a corresponding convexity. An examination of this projection shows that its elements consist of exactly the same elements as the maxilla proper, except the corneous and transitional layers. Its periphery is composed of the prismatic or columnar layer of cells of the Malpighian stratum, while the space within the boundary thus formed, will be found filled with the polygonal cells of the Malpighian stratum, yet of a slightly less size than those found above.

Serial sections of the entire jaw will show the fact that the epithelial projection mentioned, will be found to extend the entire length of the jaw. It forms what is by authors of to-day, termed the epithelial band, and which in all animals appear the same. The central portion of the epithelial band is, in cell structure, substantially the same in form, as the polyhedral portion of the Malpighian stratum above, and showing the same form of imbricated cells. As soon as the epithelial band has attained the greatest depth which is provided for by nature to do, another process is seen to proliferate from the concave aspect of the epithelial band. It differs from the epithelial band somewhat in appearance, as it at first consists of but little else than two rows of columnar cells, yet sufficiently apart to contain a few cells of the polyhedral form, and which are bounded by the continuity of the two rows of the columnar cells. After its full formation, this process will be found perpendicular to the epithelial band, and to have assumed the form of a round bottomed flask, or nearly so, being attached to the band by that portion answering to the neck of the flask. This process just described, is called the epithelial lamina, from the fact that the two rows of columnar cells from their relative positions, present a laminated appearance. The lamina emanates from the band at a point a little less than half the distance between its base and its apex. As we have already seen, the lamina is composed of exactly the same elements as those which compose the epithelial band, viz. columnar cells enclosing polygonal cells, which are however of a somewhat smaller size than those occupying the inner portion or the epithelial band. It must be remembered that at this time, these proliferations (the band and the lamina) are yet surrounded by the unchanged tissues of the embryonal jaw, which is held in position by the cartilage of Meckel. As development of the lamina progresses, polygonal cells of yet greater size make their appearance in that portion resembling a flask, and these cells in no way differ

in form from the Malpighian stratum, or the band. After a time, on the lower aspect of the lamina, (and corresponding in number and location with the teeth to be developed), may be seen small buddings or protuberances, and which assume a direction downward. To these protuberances have been given the name of follicular buds, and from the fact that they, through development, finally become enclosed within the follicles, or sacks of the developing teeth. Gradually this bud projects itself further downward within the gelatinous tissue of the jaw, yet it retains its connection with the lamina by a slender process or cord, which continues to lengthen, as the bud continues to grow in size. This bud constitutes the enamel organ, which for a time remains connected with the epithelial band, through the medium of the cord formed of the lamina. It is proper at this time, to refer to the fact that, as the enamel is thus derived from the epithelium, after the eruption of the tooth from the jaw, there can, in case of injury to the enamel, be no natural process of repair.

A glance at the primitive enamel organ will show that, as a continuation of the lamina, it is composed of the same layer of columnar cells at its periphery, while within the same polygonal cells are present, but of small size. As the follicular bud sinks farther into the jaw, the polygonal cells of the lamina gradually disappear, until little remains, save the two rows of columnar cells, which yet remain continuous with those of the band. In the course of development, the lamina and cord show the presence of buddings from their surfaces, in the shape of knots, composed of the same elements seemingly, as those contained within the cord itself. After the lamina has changed its course from a horizontal to a vertical direction to form the enamel organ, it becomes club-shaped, and increases in size. This increase in size is due to increase in the numbers of the columnar and polyhedral cells composing it. By this time the (formerly) club-shaped body has assumed a shape nearly spherical, yet remains attached to the cord, and represents the fully developed enamel organ.

At about the time of its full development, an examination will develop the fact of a slight change having taken place at the base of the enamel organ. This change consists of a slight depression at the base, and from below upward. It presents the same appearance as would a rubber ball, if a hard wooden ball were to force against it, and which if continued, would finally cause the rubber

ball to enclose the wooden one by a folding of the rubber ball upon itself. The beginning of this compression is coincident with the appearance of a new factor in the developmental process.

This new factor consists of a papilliform body, which arises in that portion of the jaw which corresponds to the subdermal portion of the epithelium, and by its pressure in an upward direction, causing the concavity in the base of the enamel organ. It assumes a rounded form, and continues its growth upward into the enamel organ, the concavity of which increases, in proportion with the growth of the papilla, which occupies the depression within the enamel organ. This papilliform body is that which, through its development, finally constitutes the dentinal organ, and which continues to occupy its location within the enamel organ ever after, but without any connection between the two tissues, except at the base of the enamel organ, where it folds upon itself. We will now make an examination of the constituents of the enamel organ at about the fifteenth week of the human embryo.

At this time we find that the polygonal cells which at first formed the interior of the enamel organ, have undergone a marked change in their form. They at this time occupy positions for the most part on either side of the dentinal organ, and those which occupy positions farthest from the columnar cells, have assumed a form closely approximating that of stars, the points of which are formed of processes which inosculate with those of the other stellate bodies; the whole forming a net-work, and which is termed the stellate reticulum of the enamel organ. Processes of these stellate cells also inosculate with the elements of the outer and inner columnar cells, near which there yet remains greater or less numbers of the polygonal cells, and which change their form proportionately with the growth in size of the enamel organ. These elements of the enamel organ are immersed in a substance which is apparently without any definite form, and which in appearance closely simulates that of albumen, and is said to be coagulable through contact with acids. The transition of the polygonal cells into stellate elements is accounted for by the fact that the albuminous substance gradually insinuates itself between the polygonal cells of the enamel organ, and thus forcing their walls apart, the separation between the cells yet remaining intact, accounts for the presence of their processes.

The pressure of the fluid against the cell, causes certain por-

tions to assume a concave form, which accounts for the stellate appearance of the cell. It will be remembered that the periphery of both the epithelial band and the enamel organ, is composed of columnar cells; but at the moment of the appearance of the dentinal organ within the enamel organ fully developed, these columnar cells which occupy a position in contact with the dentinal organ, undergo an important change. They at once increase in length, while those without the stellate reticulum become smaller and continue to decrease.

The function of the prismatic cells of the concave portion of the enamel organ is, as we would suppose, the creation of the enamel, and are termed ameloblasts. The word is a compound of the French email (meaning enamel), and the Greek blastos, meaning a germ, or the first formation. These cells are those from which the enamel is directly formed, and it will be noticed that between the ameloblasts and the cells of the stellate reticulum, there is a stratum of cells which consists of only a few layers, and which serves as a sort of connecting link between the two varieties of cells, and which is called the stratum inter-medium. They represent a transitional stage between the enamel forming cells, and those of the stellate reticulum, and are continuous with both. An examination of the ameloblasts at their free extremity, or that portion of the cell in immediate contact with the dentinal papilla, develops the fact that they are in shape hexagonal, or of the shape of the mature enamel rods. We have spoken of the base of the enamel forming cells as in contact with the dentinal organ. We must modify the statement somewhat. If we examine carefully the apparent line of contact between the two, we will notice a clear line of separation between the two, and which, on being detached, proves to be a true membrane. It will be remembered that in speaking of the Malpighian stratum of the epithelium, mention was made of an extremely delicate membrane, upon which rests the bases of the columnar cells of that stratum. Now, if the whole process of the development of the enamel organ has been carefully watched, it will be apparent that the bases of the enamel cells point in the direction of the dentinal papilla, and that the enamel cells yet rest against the basement membrane, yet its precise function in the formation of the enamel is yet a matter of uncertainty. We now return to the subject of the enamel organ at the period when it is receiving the impression of the forming dentinal papilla. On the first appear-

ance of the dentinal papilla it appears in a small, and slightly opaque point, and corresponds in shape with the depression in the enamel organ. This opaque appearance is due to the new elements which have arisen in the embryonal sub-dermal tissue at that particular point, and which assume a hemispherical shape. This represents in its incipient form, the future organ of dentinal formation. An examination under a sufficiently high power, shows it to be composed of cells of a higher grade of organization than those of the embryonal tissue of the jaw, being nucleated bi-polar and stellate cells.

An examination at this time shows an entire absence of anything which in the least degree resembles nerve tissue, but an occasional blood vessel of small caliber may be found, as at this period in its life history, nerves are not in the least necessary, while blood vessels are a necessity, for the purpose of affording the necessary nutrition for the development of the future dentine, as well as the organ through which it is developed. After a time the papilla assumes the form of the future tooth which it at this time represents, whether incisor, bicuspid, or molar. It will thus be seen that the shape of the future enamel is determined by the shape of the dentinal organ, and that whatsoever shape the dentinal organ may assume, such will be the shape of the future tooth. There are, however, differences in opinion expressed by different writers in reference to the subject, some contending that as the enamel organ is formed previously to the formation of the dentinal organ, therefore the dentinal organ is the passive structure, but however that may be, it has never been definitely demonstrated as a fact. Continuing our observation of the developing dentinal organ, it will be seen after a time that it slightly diverges from its former vertical course, and assumes a slight obliquity, and it will at the same time be noticed that a certain amount of constriction has taken place at its base, and that the constriction has taken place at the point where the line of columnar cells of the enamel organ has reflected back upon itself. An examination of the dentinal organ at this time reveals the fact that its periphery consists of a very thin layer which is apparently without structure, and possesses a higher degree of refraction than the tissue which it surrounds. It is out of this structureless tissue, that the peripheral cells of the dentinal organ finally arise. These cells are those which serve as a medium through which the matrix of the dentine is formed, and its calcifi-

cation is effected. We know them as the odontoblasts, a term which, in the opinion of the author of this paper, is a misnomer.

As soon as the elementary papilla has taken upon itself a hemispherical form, there may be found originating at its base, and projecting outwardly, two processes, which assume a direction parallel to, and surrounding the external epithelium of the enamel organ, so far as produced. These processes arise direct from the tissue of the dentinal organ and are identical with the tissue of the organ of which they are processes.

With the continued development of the dentinal organ, we also notice an increase in the length of the processes of the organ and which follow the convexity of the external epithelium, and finally meet at the apex of the enamel organ. We now return to the subject of the epithelial cord of the enamel organ. It will be remembered that we last spoke of it as remaining attached to the enamel organ, and we noticed it as the last medium of connection between the Malpighian stratum of the epithelium, and the enamel organ. We followed the course of the processes of the dentinal organ until they met at the apex of the enamel organ. But did they meet? Hardly, for there yet remained the epithelial cord to prevent a complete contact. A continued proliferation of the processes against the cord, caused it to become severed at the point of contact with the processes, and its cessation of continuity is supposed to be due to resorption caused by pressure of the processes of the dentinal organ against the cord.

The processes uniting at the apex of the enamel organ, enclose the enamel, as well as the dentinal organ and the follicle is now developed. We have thus far followed step by step, the development and completion of the machinery constructed by nature, and through which the tooth is created. We have watched the proliferation of the Malpighian stratum, to create the enamel organ, the subepithelial tissue to produce the dentinal organ, and a proliferation of the tissue of the dentinal organ to produce the walls of the follicle. We have now described the perfectly constituted dental follicle, as found in all animals whose tooth crowns are incased in enamel. A glance at the dental follicle as thus constituted will show its resemblance in form to the outlines of an egg.

At the time of the completion of the follicle, it is surrounded by the tissues of the jaw which are yet in an embryonal condition, and the walls of the follicle are but a grade more complex in their

structure. We have before noted the fact that the dentinal organ contained a number of blood vessels, and the follicular walls will be found to contain numbers of them also, while as we have seen, the stellate portion of the enamel organ is entirely destitute of them. The location of the follicle in the jaw, differs in different animals, being in man located near the epithelium, while in some of the lower animals, it is located at a greater depth, and with a consequently greater length of cord. As soon as the development of the follicle has been completed, and the connection with the enamel organ has been severed, we note various changes taking place in the cord, as it remains enclosed within the embryonal tissue of the jaw. At the point of separation will be seen a remarkable increase in the numbers of its cell elements, and followed by the formation of irregular buddings which become detached, and sink gradually into the deeper portions of the jaw. For a time they remain attached to the lamina by pedicles, which by absorption finally severs their connection with it. These aggregations of cells will be found to consist of the same forms as we have found composing the center of the band and cord, an examination revealing the fact of an absence of the columnar variety, constituting the periphery of the epithelial cord.

Before the time of the appearance of dentine within the follicle, these buddings will have disappeared by absorption, and before the time of the full development of the tooth, the lamina will also have disappeared, and by the same process. At the time that the phenomena of the budding of the cord is taking place, the same thing may be found taking place at the periphery of the enamel organ, or in other words, at the exterior surface, and also mingle with the elements of the walls of the follicle. They will be found however in greater numbers, at the apex of the enamel organ, about the point of the former connection of the cord with the enamel organ. At this time we find a slight change in the form of the constituent elements of the tissue of the embryonal jaw.

There appears a loose network of embryoplastic elements which appear as bipolar cells, and so arranged that the network appears as if composed of laminated cells. At this time at a location beneath the base of the follicle appears a new variety of cell, that which we term the osteoblast. This is the bone forming cell, and soon we perceive traces of an ossification at this point, and as a horizontal layer. This layer serves to separate the follicle from

that portion of the jaw which afterward contain the principal nerves and blood vessels of the jaw.

Lateral processes then arise from the extremities of this, the first named ossification, and forming a groove in which rests the follicles, which for a time are not separated by the future osseous septi, which begin their formation after the crowns of the teeth have commenced their development. At this time there will be found in the network of the tissue many blood vessels which, however, have no connection with those of the dentinal organ.

Thus far we have been engaged in a consideration of the subject of the genesis and development of the dental follicle of the deciduous tooth, and in our consideration of the subject, we have carefully studied the reports of modern investigators in the science of Dental Embryology, and regarding the genesis of the temporary follicle, late authors seem to be generally agreed, but in regard to the genesis of the permanent follicle, or rather the point of its genesis, there appears to be a difference of opinion. For instance, one author believes that the cord of the permanent tooth arises from the debris of the cord of the follicle of the temporary tooth. Another, that the permanent tooth cords emanate from the epithelium direct. Another, that it is a proliferation from the temporary cord. Yet another, that it arises from the external epithelium of the enamel organ, and at the point of its former connection with the temporary cord.

There are reasons for believing that it may have its genesis at either of the points mentioned, except the debris of the temporary cord. This theory is sustained by the result of the investigations of our own Dr. G. V. Black, and the author of this paper has in one case found to have apparently arisen from the epithelium direct. Wheresoever it may originate, it is accepted as a fact that, in its progress downward, it pursues a spiral course, so much so that a section made through the jaw in a direction vertically, shows the permanent cord in appearance resembling the duct of a sudorific gland in its progress to the surface of the skin. The lower portion, however, shows an absence of the spiral and develops the presence of a club-shaped body, which is finally through development, to form the enamel organ of the permanent follicle. These club-shaped bodies finally adopt a shape in conformity with the teeth which they represent, or, rather the dentinal bud assumes the shape of the future tooth which it represents. For instance, the

six anterior teeth are represented by buds which possess but one cusp. Those which represent the teeth which are to replace the deciduous molars, are characterized by buds which possess two cusps, while the permanent molar buds are found to possess cusps corresponding with the teeth which they represent. As soon as the dentinal buds of the permanent tooth follicles have assumed their proper forms, their cords become ruptured, and have no further connection with their follicles. As in the case of the temporary cords, they separate into small bodies which are found interspersed among the elements of the temporary cord, and afterward disappear. This is the method of genesis of the follicles of those teeth which replace the twenty deciduous teeth. We have found that each cord of the temporary tooth or its follicle, or, the epithelium of the band has furnished the buddings for the enamel organs of those teeth. The buddings which are to develop the enamel organs of the first permanent molars are like those of the temporary teeth, derived from the epithelial lamina direct. We will remember that no follicle has before penetrated the tissue at the point of development of the first permanent molar at any time before.

The origin of the enamel organ of the second molar is similar to that of the enamel organs of those teeth which replace the twenty deciduous teeth, as it is a proliferation from the cord of the first permanent molar, and its genesis corresponds closely with that of those teeth which replace the deciduous teeth, but instead of the cord of the second permanent molar pursuing a downward course into the jaw direct, it takes a course horizontally in a direction toward the ramus, and afterward assumes a vertical position.

THE USE OF GOLD WITH AMALGAM.*

BY F. H. BRIMMER, D. D. S., MINNEAPOLIS, MINN.

Before commencing the subject of my paper—"The use of Gold with Amalgam"—I wish to say a few words in regard to the use of amalgam generally. Speaking of amalgam as an invention, growing out of the needs of the profession for something other than gold—in plastic form—its history has been the same as all other useful inventions: it has met with the usual amount of opposition. On the other hand some of its advocates have used it injudiciously,

* Read before the Minnesota State Dental Society.

and where gold with better judgment and conservatism should have had its rightful place. One of the hobbies ridden by many, who, during the early days of amalgam, denounced it, was mercurial poisoning and salivation; gradually blossoming out into the more recent "Chemical, Electro theory," with which you are all familiar. In that part of dentistry—the filling of teeth—dentists throughout the world have to contend with two kinds of tooth structure, which, for the sake of convenience, we will call the good and the bad. The first kind, the tooth structure nearly perfect and closely approximating, belong to the gold class. I think the rank and file of dentists to-day believe that in good tooth structure, gold combines the very largest number of excellencies as a filling material, and I certainly wish to be included among the number who do so believe. The bad teeth, as a rule, are the ones that in most cases will have to do with the merits of the method advocated in this paper. The teeth that are soft and chalky, or of a glassy brittle kind, by this method of facing, and when the gold face is made with careful hand pressure, escape the shock of malleting and the breaking of any portion that is liable to happen when all gold is used. In the glassy brittle kind spoken of, you all have noticed that in using the bur or excavator, cracks will sometimes follow the instrument, little lines shooting off, sometimes crosswise the tooth, but more often lengthwise.

Now these cracks are often likely to happen in the much hammering of an all gold filling. But if we are extremely careful in preparing the cavity in using very sharp burs and holding the hand piece perfectly steady, so that it does not sway in any direction, then by filling with a facing with gold, with careful hand pressure, I believe many more fillings would remain permanently secure in such teeth than all gold, where in my judgment the cracking of the teeth or the retaining points really happen at the time of filling, though the filling may not become detached until sometime after, owing somewhat to its position and in amount of leverage it escapes. I think in many cases in such teeth and with all gold, we are really knocking the filling out while we are knocking it in. Some old Greek philosopher once said: "There is no part of any piece of mechanism stronger than its weakest point," and we would all do well to remember this principle when operating on the class of teeth under consideration. There are two classes of patients that justify me in advocating this kind of work: one class—

those of sufficient means, where the price of gold exclusively is of secondary importance, many of them perhaps wishing gold, but whose teeth are in a deplorable condition; decay extensive with frail walls; making the malleting and proper condensation of gold even with the most careful manipulation, an operation oftentimes dangerous and uncertain as regards durability. The other class include those who appreciate their teeth and want what their means can pay for, and what will be best and most durable, but where money is an important consideration not always from choice but from their circumstances and condition a compulsion.

Now the merits of this class of work is as truly applicable to one as the other, for the underlying principle—"what is best for the teeth, govern both classes alike." In the class of teeth where this kind of work is indicated I should face with gold only where amalgam alone would be noticeable. There are many teeth where to use gold wholly it is hard to get sufficient under-cuts to give strong anchorage especially for those fillings where there is constant leverage exerted; with amalgam it is different. A slight under-cut in several directions opposite each other constitute a binding or strengthening brace; so that equal distribution of leverage makes the foundation for a gold face secure.

Now as to what kind of amalgam shall we use? I believe the most essential qualities in an amalgam is its freedom from shrinkage and oxidation, even though the working qualities be not so easy. It should be moderately hard and in facing sharp edges should be avoided and care taken to pack the gold snug to the edge without crumbling and working the dust in with the gold, thereby effecting the cohesion of the gold.

If amalgam is used containing gold I think the squeezing out of the excess of mercury should be avoided. The better way, judging as nearly as possible the amount needed, and then, if too soft, instead of squeezing, add more amalgam to bring it to the required consistency. The strong affinity that gold has for mercury will show us that when we squeeze out the excess from an amalgam containing gold, the proper proportion of gold intended by the manufacturer in the formula, is broken up and eliminated. And this same law of affinity no doubt affects other amalgams not containing gold but of several different kinds of metals, so that if there is any significance in making amalgams by weight and proportion we should preserve it in mixing and filling.

Where this class of work is indicated, it may be natural for some who have not practiced it, to ask in regard to prices; each one must be their own judge as to prices. I take Dr. Flaggs' principle to govern my own—"Charge for what saves the tooth best." And for a patient who is abundantly able to pay, there need be but little difference in price. For patients when the price *is* an important consideration, we can make quite a reduction between this and all gold, and still do better by ourselves when we take the difference in time and labor into account.

If there should be any who object to this class of work thinking it easy and thereby being resorted to indiscriminately and injudiciously, let me say that it takes the same skill to face in most cavities as to fill wholly with gold, and in some cavities more. Anyone who has filled cavities in artificial teeth, knows that the contact is slippery: so it is in facing over amalgam. The first few pieces should be used soft or slightly warmed. Right here I may properly say that in almost all cases the amalgam should be perfectly hard and crystallized before putting on face. Where the walls are broken off nearly or part way to the gums, I should in such teeth, persuade the patient to have a porcelain crown or when not too noticeable perhaps advise an all gold crown.

But facing is indicated I think, where there is almost a full length strip of the lingual wall remaining, and—say two-thirds of the buccal wall; this estimate refers to the bicuspid teeth. The same discrimination will refer to all the teeth only in course of a modified form. There are some patients who object strongly to porcelain crowns for this reason: they dislike to have an artificial tooth in their mouth; preferring, if possible, to retain what remains of their own natural one. This is, I think, a natural and reasonable objection, and one that probably would seem more reasonable, if we looked at it more from the standpoint of the patient, than our own; and with these patients, if there is a respectable portion of the walls remaining as regards strength and appearance, I consider their wishes and build up and face. I think the profession to-day, more than ever, is recognizing that what can we best do for our patients, is the question, rather than "what are we going to get out of them" irrespective of our method of practice. The practice of this kind of work, with good judgment and conservatism, enters but little the rightful domain of gold; neither does it in the least drag down prices or detract from skill and durability of work.

The imperfect tooth structure of such a large number of our patients cannot help but make some of our work imperfect as regards durability, whatever our method of saving may be, or the filling material used. Let us use intelligently and without prejudice whatever material that shall seem in our judgment the best. For prejudice without investigation is the greatest hindrance to progress in any direction.

For the same reason that there is such a diversity in tooth structure as regards quality; for the same reason does it seem to me that there should be a diversity of filling materials; so that there seems to be a legitimate department that each filling material should occupy. We must not become stereotyped in the use of any material to an extent that we cannot see any good in another. There should be more individuality of research and investigation, and not so much contentment in relying on what others have found out for us, thereby making the many rely on the opinions of the few; a slave to texts and books, and content to plod in the rut. Let us try things and find out all we can for ourselves. Though such a prominent light in dentistry as Dr. J. Foster Flagg pins his faith to plastics, amalgam principally—yet we all feel, nevertheless, that the “royal metal” still holds its rightful place; and on the other hand, if some operator of equal intelligence and greater skill in the manipulation of gold, pins his faith to gold to the exclusion of amalgam, yet we still feel assured that amalgam holds an honorable position as a filling material. The profession has long been looking for a perfect filling material, and until we find it let us take the good we find in everything. Now though there be a few who do not use amalgam, or say they do not, and the rest in its sphere of usefulness place it secondary to gold, I ask you to consider this question, has not amalgam a legitimate and honorable position? Then if so, should it not be the highest aim of those who use it, not to do so only when they cannot use gold, but to use it in those teeth and places where honesty of purpose intelligently indicates its use. And in the use of gold with amalgam I firmly believe that in the manner I have described, we may with the patient oftentimes derive great benefit.

COPPER AMALGAM.*

BY E. K. CLEMENTS, D. D. S., FAIRIBAULT, MINN.

Copper amalgam has been used by a few practitioners, who were fortunate enough to think they knew its virtues for more than two decades, as far as I can find out but it is only within the last few years, that it has been brought prominently before the profession in this country, which is ever too ready to take up without due consideration of its merits and demerits and overdo a new thing in practice if that thing has one or two good winning qualities, no matter how many bad ones it has.

So by the susceptible and unwary this amalgam has been abused and the sooner those who use it in a wholesale manner abstain from so doing the better for the molars and bicusps which would be turned to nuggets resembling those of coal by its use. Some have even gone so far as to use it exclusively as an amalgam and I know they will rue the day when they were so captivated by it.

It consists of pure copper and mercury united under the proper condition and prepared by a series of washings and rubbings, the details of two processes of which may be found in the DENTAL REVIEW of Nov. 1887 and Oct. 1889.

In preparing it for insertion into the cavity a small piece of the prepared material is gently and slowly heated in an iron spoon over an alcohol lamp until globules of mercury show themselves on the surface, care being taken not to heat until the globules coalesce to any great extent when it is crushed in a mortar and in the so-called dry amalgam which is by far the best in the market, just enough mercury should be added to make the mass plastic. It need not be triturated for any length of time as it does not set as rapidly because of the crystallization being more completely broken up and this and over-heating or at least heating a piece too many times I think accounts for the cupping spoken of by some, but which I have never seen in a real good black healthy copper amalgam filling.

The best results are obtained by using it as dry and as quickly as it can be manipulated and do not work it any more than is absolutely necessary after it is in the cavity, as you are very apt to

* Read before the Minnesota State Dental Society.

injure it beyond repair outside of taking the whole thing out and refilling.

When used soft it is very apt to draw away and roll up from the edges of the cavity, or get shoved out by the tongue or finger of inquisitive patients or by food eaten even after the filling has been in an hour.

It takes it several hours to get as hard as it will but the quicker we can make it set the less liable, of course, it is to receive injury.

Its use is more or less limited by its lack of edge strength and the certainty of its turning black, so it cannot be expected to supplant the alloy amalgams.

Its freedom from expansion and its peculiar fitness for filling very frail-walled cavities, teeth of poor structure and those troublesome buccal cavities in molars and bicuspid make it indispensable in a well stocked operating case.

Nearly all amalgams can be used in subsalival fillings, but copper amalgam can be used to better advantage in such places than any other, and this property renders it especially practical in the conservation of children's teeth, when the little ones will not submit to the use of the rubber dam or anything else to keep the cavities dry.

The margins of the cavity should be as little beveled as possible, as the overlapping of the filling is almost sure to chip up and become rough edged so affording lodgment for food, and you all know the results of uncleanness in the mouth no matter in what position.

It is very congenial to very sensitive dentine and nearly exposed pulps and seems to increase the tendency to the formation of secondary dentine and from some peculiar property, supposedly anti-septic, it is very adaptable in deep cervical borders and in building up roots for the reception of gold crowns. Never try to use it in conjunction with other amalgams as from some cause or other it will not harden with some and with others when it does harden they will both be so granular as to render the filling absolutely useless. I would like to have that explained as I am at a loss to even attempt it.

In some mouths the copper amalgam does not turn black, but either remains quite bright, or is of a greyish color and is caused by some peculiarity in the mouth and it seems to me to be out of place in such mouths. As I intimated before, I don't believe a copper

amalgam filling to be healthy, if you will allow the expression, unless it is black, tooth substance and all. It is only a matter of time before the enamel is as black as the filling. You have all noticed when excavating those buccal cavities a line of chalky looking enamel, the path of which sometimes completely surrounds the tooth, and if not followed to its extent by the bur it is almost sure to break down and undermine gold or an alloy amalgam filling. My observation has been that copper seems to deposit an oxide or sulphide which completely impregnates the soft enamel and so strengthens it as to resist decay quite successfully. I always had an idea that the cupric salt was deposited and it was that that exerted an anti-septic influence under a copper amalgam filling, and I am almost convinced since reading the results of a series of investigations by that untiring investigator, Miller of Berlin, in the December '89 *Cosmos* that it is a fact. But still I am inclined to think that those who use it the most cautiously will use it the longest, as its adaptability all things considered is quite limited.

PROCEEDINGS OF SOCIETIES.

MISSISSIPPI VALLEY ASSOCIATION OF DENTAL SURGEONS.*

*Discussion of DR. W. B. AMES' Paper. Phonographic Report, by F. W. SAGE, D. D. S.

WEDNESDAY MORNING, MARCH 11.

[Continued from page 242.]

Dr. L. E. Custer: The general explanation of the waste of copper amalgam is that it is due to the action of an acid. I object to this; it is not satisfactory for these reasons: 1st. If the saliva were sufficiently acid to dissolve the amalgam or copper filling, it would also injure the enamel of the teeth, and act upon the silver, zinc or tin often found in fillings in the same mouth. 2d. If these were dissolved by the acid saliva, they should disappear equally all over the surface, which in all cases they do not do. 3d. Some disappear, while others, (fillings?), in the same mouth do not. 4th. If amalgamated copper is susceptible at all to the action of acid, as a solvent, it should disappear from between the teeth, where the acid products of food-ferments lodge. 5th. Copper amalgam wastes in an alkaline condition of the mouth, as well as in an acid

condition, though not quite so frequently. The fact is, Mr. President, the acid condition is not the direct cause of waste of copper amalgam, but this condition favors the waste of certain kinds which characterized the first attempts of the manufacturers in this country, simply because some copper amalgams disappear in acid saliva, is not proof that the fluid is a solvent. By this we are led to believe there is a connection between the two.

Now, in order to understand what the rule is, we must get down to first principles; we must understand what a copper amalgam is—what changes it would be likely to undergo in the mouth, and under what influences it would be most likely to lose substance. This material is composed of copper particles in a very fine state of division, these being more or less perfectly amalgamated. If these particles are perfectly amalgamated, there would be no copper exposed at all, yet if one of these copper particles be broken in two, the inside will present a clean, copper surface. We must understand there is no fusion of the one metal into the other. In the filling these are like the bricks and mortar of a wall, the copper particles representing the bricks, and the mercury the mortar. Whether these copper particles are perfectly amalgamated or not, is a very important matter to be considered. Another consideration would be in regard to the quantity of mercury—whether these copper particles are simply amalgamated, or whether there is an excess of mercury to float them at a considerable distance from one another. A third consideration would be as to the manner in which the compound has been manipulated by the dentist, preparatory to filling. These are conditions concerning the material itself; but besides these there are two other factors which must be taken into consideration: the saliva and attrition. You are aware that we have been using a great variety of copper amalgams. Copper is a metal very difficult to amalgamate. There are no less than four methods for producing amalgamation. Then again, all manufacturers do not use the same amount of mercury, and operators differ in their ways of manipulating the material. The first copper amalgam made in this country was made by the mercuric nitrate process. Some was made by precipitation, by means of iron or zinc. The products of this latter method were very likely to be contaminated with foreign metals. It was coarse, not well amalgamated, often contained twice the necessary amount of mercury, and was used with as little discretion as if it had been so much hot mush. So that it is no

wonder the cry went up from Brooklyn that there would be a grand "howl" some day.

The same material used in different mouths would give different results; or on the other hand, different materials used in the same mouth would give different results. To go into details in describing the properties of these different kinds of copper amalgams, would require too much time; however, we may, with profit, consider the effects of perfect amalgamation and the opposite, and the effect of the quantity of mercury upon the waste of these fillings in an acid or an alkaline saliva, and under attrition.

A perfectly amalgamated filling presents, as the paper states, upon its exposed surface, pure mercury, which would be exposed to the two influences—saliva and attrition. Saliva of an alkaline reaction, would hardly have any effect upon pure mercury, neither would a saliva of such weak acid reaction as is found in the mouth have any appreciable effect upon the mercury, since mercury is dissolved easily only in strong nitric acid. The effect of attrition upon such a filling, would probably be to dislodge copper particles. But since a properly amalgamated filling—having no excess of mercury—properly used, can scarcely be touched by a file, this too, must be included. Therefore, we conclude that a pure mercury surface will not waste, when exposed to saliva or attrition.

But, as stated in the paper, mercury in the cold state, sometimes forms a salt—the sulphuret which Dr. Ames says is insoluble. So this would not be acted upon by the saliva. But if this salt should be [*sic.*] easily dissolved, there would be a continual reformation at the expense of the filling, causing it to waste when exposed to attrition. As further stated in the paper, this salt forms a tenacious film, therefore we must agree with the essayist's conclusions, that a perfectly amalgamated filling will not waste. If during the finishing of the filling at a subsequent sitting, the unamalgamated centers of copper particles upon the surface, should become exposed, in an acid saliva these would probably waste by galvanic solution, the process ceasing when all the exposed particles had been dissolved. If in an alkaline saliva, [these centers should become exposed—Rep.] the salts formed would be removed again and again, until all of the exposed particles were removed.

A poorly amalgamated filling presents upon its exposed surfaces areas of copper and mercury, subject to the action of attrition. If those copper particles have not been properly amalgamated before

inserting the filling, it is not at all probable that they will become so afterward ; the two metals will remain separate and distinct, and subject to external influences. On general principles we may exclude alkaline saliva as having any effect upon copper; but if in an alkaline saliva salts should be formed, it would depend entirely upon how strongly these salts are attached or whether they are insoluble as regards the question of wasting of the filling. The copper salts may sometimes be removed with a toothbrush, so that when exposed to mastication, the continual loss and reformation at the expense of the filling, finally attracts attention. Then the copper salts, and especially the sulphate, are soluble in water, so these would disappear as rapidly as formed.

When we subject a poorly amalgamated filling to an acid saliva we have quite a different result. Where formerly this was supposed to be due to chemical solution, Dr. Ames shows satisfactorily that it is due to galvanic solution. It is not necessary that a fluid be strongly acid in order to cause galvanic action. A saliva showing even a slight acid reaction may cause galvanic action. Whenever this galvanic action is going on, the surface of the filling is likely to present a bright appearance, which fact led formerly to the belief that the action was of a chemical rather than of a galvanic character. In protecting positions if insoluble salts are formed, the surface would be free from galvanic solution.

The proportioning of the mercury is a very important matter to be taken into consideration, especially where the filling is to withstand mastication. When these amalgamated copper particles touch each other, and all the interstices are filled with mercury, we have a condition in which more of these unfavorable phenomena should present themselves.

It would be interesting to go into the therapeutics of copper and mercury salts. If, as stated in the paper, those fillings which do *not* waste form mercury salts, what will become of our beautiful theory of the effect of copper salts, unless those of mercury are soluble? How can the insoluble salt be antiseptic?

The practical points to be borne in mind finally, are these: A poorly amalgamated filling is especially exposed to dissolution in an acid saliva, or in an alkaline saliva where the forces of attrition are brought to bear. A properly amalgamated filling may be used in all conditions of saliva.

Dr. J. S. Cassidy: So far as concerns the lasting properties of

copper amalgam, I am of the opinion that with proper amalgamation of the material, the filling should not waste. We must have an acid reaction in the mouth, to make galvanic action possible. Common salt, which is neither acid nor alkaline, will act. Galvanic action then results, if the amalgam be contaminated with the baser metals. A very dilute solution will cause this action, and the attendant waste of the metal. Another cause than the imperfection of the amalgamation, is that the mercury and the copper particles are not in chemical combination.

Dr. Betty: I have been wondering what was the cause of this washing away. I discontinued the use of copper amalgam, a year ago, on account of that. Dr. Callahan suggested to me that the material would always waste unless it turned black. The fillings should be finished at once.

Dr. C. M. Wright: I have had as good opportunity as anyone, probably, for observing the effects of copper amalgam in the mouth. It is used extensively in Germany and Switzerland, and is *the* amalgam in those countries. One of my *confrères* used it extensively.

The waste to which reference is to-day being made, appears to pertain to fillings that present a bright appearance. Mr. —'s fillings were black as powder; the wasted surfaces sometimes showing extensive scooping out, the remnant filling being very black.

As Dr. Taft aptly remarked, while he was willing to put aside the discussion of the injurious effect of amalgams, the uncertainty of the outcome, when this material is used, is reason enough for his not employing it in his practice. I know of no other amalgam which presents such a lack of uniform results as the copper amalgam. Of course we are all interested in this material on account of Dr. Miller's ascribing to it the property of checking the growth of micro-organisms. It may be—it *is* probable, in view of clinical observations and in view of the theories adduced, that it is an excellent material for the disease which we call caries. But *as a material* it must be improved, before we can rely upon it. Dr. Ames' experiments indicate a solution of the mystery attending waste.

Dr. Taft: The very feeble affinity of the component metals in this material, constitutes one of the greatest objections to it. The material, therefore, stands as an inefficient barrier against the inroads of destructive agencies. Has this amalgam any advantage over the amalgams of gold, tin, silver and others? If the union of

the particles is actually analagous to that of mortar and brick in a wall, what can we expect but a formation of these salts favoring waste? If this be true even in a degree, it seems to me enough to condemn the material as impracticable. From what Dr. Wright has told us about it, I have no hesitation in saying that I think its use should be discontinued.

Dr. Betty: I wish to call attention to the same peculiar blackening of the combination of tin and gold suggested for use by Dr. Miller. This combination has several times been brought before the profession. In ten weeks, a filling made by me according to this combination method, and covered completely with gold foil, became black throughout. In some cases tin under gold turns hard as steel, apparently. Some fillings are blackened only superficially. I do not think I have seen any such filling that did not turn black.

Dr. H. A. Smith: I have experienced all the difficulties which have been mentioned. I was amazed on hearing Dr. Ames' instructions not to grind copper amalgam a great deal. A few years ago we were told to be sure and grind thoroughly. A distinguished dentist of Chicago said awhile ago that repeated heating was an essential matter. I have learned much from hearing this paper and the discussions.

Dr. Smith here produced several solid amalgam crowns (bicuspid and molars) hollowed at the base for attachment to roots, with cement—the invention of a Hungarian dentist.

DR. AMES: I am greatly pleased with the discussion. It is not necessary to have an acid condition in the mouth to produce electrolysis. In all my use of this material I never attached any importance to the supposition that it had antiseptic virtues. According to the theory I have presented, a filling which will not waste can hardly possess such virtues. If the fillings waste the salts will permeate the tooth substance. I do not think the affinity between the components of copper amalgam are so feeble as to amount to the materials being "impracticable" for filling, as Dr. Taft has said. If the manipulation has been correct, nothing but the force of heat amounting to 250° F. will break up the union of the particles. That is the proper degree of heat to use in heating the material preparatory to using it. By holding a piece of the copper amalgam with a light pair of tweezers in a spirit lamp flame until minute globules begin to appear on the surface, you have the exact

amount of heat required. If held in the flame longer than this, the mercury will be oxidized, and the result may not be satisfactory. In experiments I have made, I found that even at 150° F. (scalding heat) no evolvment of mercury resulted.

DR. LESLIE : There is no chemical union of particles in any amalgam. There is a true chemical union between pure gold or pure silver and mercury.

[TO BE CONTINUED.]

MINNESOTA STATE DENTAL SOCIETY.

SEVENTH ANNUAL MEETING.

ADDRESS OF WELCOME.

By EDWARD H. ANGLE, D. D. S., MINNEAPOLIS.

From time immemorial, when men banded together for the celebration of military triumphs, or for the more peaceful advancement of political or scientific affairs, have entered a city, it has been customary for some one to bid them a formal welcome.

This custom is as honorable as it is ancient, and it is my pleasant duty on behalf of the Minneapolis City Dental Society to welcome you, gentlemen of the Minnesota State Dental Association, to our beautiful city, and to extend to you the assistance and encouragement that we both as a society and as individuals are able to offer, and through the generosity and courtesies of the librarian and trustees, I am proud to bid you welcome to this beautiful Public Library Building, which is justly the pride of every intellectual and progressive citizen.

Our city society, being older, and perhaps better organized by means of nearer daily association and more frequent meetings, is able to appreciate the great importance of the State Society as the official organization of the profession in Minnesota, and we hope to not only appreciate but profit by the present meeting, believing that the time is ripe for the most important meeting in the history of the profession in this State. We shall watch with the keenest interest your deliberations upon this important occasion, and we have no doubt from the good judgment you have previously manifested in taking the highest and most enviable stand of any State in the Union in matters legislative, that ^{ar} the same spirit of true professional progress will characterize your deliberations in the

proper maintenance of our State Dental Law, in the assistance of the State Dental Board in their good work, in proper pride in and encouragement of the dental college in our State University, and that you will earnestly consider the greatest hindrance to the true progress of dentistry both as a profession and a science, in the disgraceful, unscientific and unprofessional system of education now so largely practiced by many of our so-called dental colleges, in catering solely for numbers of students and for selfish gain, rather than for quality and thoroughness of scientific instruction.

Wishing you a most pleasant and profitable sojourn in our city, and hoping that our beloved profession may be benefited by your meeting, I again bid you welcome—welcome as true scientific men and welcome as good citizens, earnestly working to promote the, welfare of mankind.

PRESIDENT'S ADDRESS.

By G. V. I. BROWN, D. D. S., DULUTH.

"There's luck in odd numbers."

To the mystic power of the lucky number seven do I doubtless owe the pleasure of addressing you, and by the same influence I have all faith in my prediction that dame fortune will smile upon the seventh anniversary meeting of this association, and shower upon us, its members bountifully the blessings of harmony, and higher thoughts for our profession. Indeed it seems to me her hand must have already been extended when Minneapolis, the home of our staunchest co-laborers was chosen as the place of meeting.

Among the old time distinctions accorded to the very odd number seven, of which ancient lore records a long list in connection with Scripture, Jewish rites and feasts, wars, portentous dreams, the superstition surrounding early scientific information, etc., is the belief that every seventh year was a climacteric year and brought great changes of climate, that every seventh period in life was climacteric or a point at which occurred important events. Thus supported by the historical significance of this number, I feel impelled to the belief that we have reached a climacteric period in the life of this society, a point which it is at least fit we should consider such questions as concern its welfare, and the extension of future influence.

For seven years have we been holding regular meetings as an associated body, there has been involved an expenditure for each

of us in time and money, with a large measure of care and responsibility in the management of necessary routine work.

Now it can properly be asked: Has this outlay of time, care and money been a sufficient benefit?

Our increasing numbers show that we have prospered, but what good have we been able to accomplish?

It is in answer to this question and in full view of its important bearing upon every vital interest in present dentistry; with the hope of future improvement in dental education, literature, science, and art trembling in the balance awaiting the success or failure of the association in our profession, that I submit this figurative balance sheet, for your consideration.

“By their fruits ye shall know them.”

Firstly. In recording resulting benefits I would call attention to the fact that at the time we joined hands under the banner of a code of ethics the dentists of this State were largely strangers to each other, and there was none of the present wide-spread acquaintance; respect inspired by inter-communication, or the general spirit of good-fellowship that gives such zest to the pleasure of our gatherings.

Secondly. Minnesota dentists were scarcely known outside her own borders, their names were seldom or never seen upon the pages of the dental journals, and for aught the profession at large might know the blacksmith or the old time barber might still have been in the hey-day of his prosperity, while today through the direct influence of this association and its past six meetings we have many friends and pleasant acquaintances among members of societies in other states, social intercourse and communication with whom is a pleasure and substantial benefit, making possible the intelligent interchange of patients, and daily broadening the range of our ideas. Our meetings, doings, sayings, the papers read by, and clinical operations of our members are published freely, that all the world may know, we too are progressing with them.

Thirdly. The gate-way to our State was open to charlatans, or whoever might be deemed unfit by more advanced Eastern States, where protection has been secured, to come and practice among us, and we were powerless to stem the flood of human offal that was pouring in upon us.

To-day the entrance is barred by a wise law, more rigid in its requirement of a high standard of education, and better fitted to

protect the status of dentistry than any other at present being enforced, is guarded by five members of this Association, and has the seal of the Supreme Court upon its lock to give assurance of its security, and stepping from out the shadow of obscurity the land of Hiawatha stands proudly the "noblest Roman of them all," respected by the profession of all other States.

Fourthly. For consideration comes the institution for the education of future members of this association, where under the sheltering arm of the State University, and under the guidance of trusty members of our band of followers who have set up a high standard which we have raised for them still higher, and better education of our students is becoming more and more a practical requirement within easy reach and expected of all, instead of a theoretical possibility attained only by a favored few.

Safely we may say thus far "well done thou good and faithful servants."

If I have seemed to be boastful in this recital judge me not harshly, for

"Breathes there a man with soul so dead
Who never to himself hath said
This is my own, my native land."

Truly the pride in up-lifting our profession in our own State is a pardonable, and a just one.

Lest however the hour of prosperity might also prove to be the hour of danger, let me bid you remember "Eternal vigilance is the price of liberty," that just in proportion as the value of what we have accomplished increases, so much the greater need have we to stand more closely and unitedly together for its protection. The law we have helped to make, the Board of Examiners we have ourselves selected still and will have always need of our co-operation and assistance as individual members, and as a body in order that the greatest good may be accomplished in the furtherance of the design of their creation.

To do this intelligently we should know something of the manner in which the duties of the Board are being performed, and I would suggest that this might be done by a committee instructed to attend at least one regular meeting of the Board, and report in full of the method of procedure at our next annual meeting. I feel sure this would be entirely agreeable to the members of the Board, and would give the members of this body a much better idea of the good work resulting from their labors.

The College too should be looked upon as one of our children, and as such should receive the hearty assistance of all, that it may be able to reach the sooner such a height in its educational standard as our purpose conceives.

I have been waving the banner of successful record before you, not in the spirit of the Pharisee thankful that we are not as others are, but knowing that nothing succeeds like success to urge onward until we, and the members of our profession in all other States, stand upon a higher level ; until National organization may have become complete and the standard of excellence shall be alike for all under the control of a National body ; until the dentists of the United States shall be so united in the bonds of fraternity that the badge of their organization may be a source of pride, and protection to the living members, and a permanent security to widows and orphans of the deceased ; until under a system of coöperation by the payment of small sums regularly, we may have in trustworthy hands a common treasury rich in funds that we may be able to

Encourage higher and better education.

Encourage scientific students, and provide assistance for them in their labors.

Encourage worthy inventive genius.

Encourage good journalism.

Encourage all good purposes.

Discourage Trusts and Corporation that would and do take the benefit of the fruit of our richest minds and use it to extort money from us the rightful heirs.

Discourage the ignorant from entering our ranks.

Control the publication of all dental literature.

Control all useful dental patents on an equitable basis.

Control the price of all dental supplies.

Control political influence.

Why should dentists refuse to learn the lesson of the day ? The power of organization is taught us from every rank, in every class, in every occupation. The secret of the security of society's four hundred, the success of business men, of the protection of the laborer.

Let the Minnesota State Dental Association do a full share toward this advancement, let it be said that our members have no thought but for the common good.

Let us stand together,

" Our doubts are traitors,
And make us lose the good we oft might win,
By fearing to attempt."

DISCUSSION.

DR. ANGLE. GENTLEMEN:—That part of the President's address relating to Dental Education and the much needed reform in Dental Colleges is a subject which should interest every dentist throughout the land from the least to the greatest, even though he take but the smallest interest in the welfare and advancement of the profession, and we cannot devote our time better than to thoroughly consider this subject. For no paper of a scientific nature will be presented at this or any other meeting this year which can have such an important bearing upon the welfare and progress of dentistry, as the system of education.

The fact is, there are a number of so-called dental colleges which are generally supposed to be for the purpose of educating thoroughly and scientifically young men for the profession; or, in other words, it is usually supposed a profession must make progress, as a result of the efforts of the colleges. But we find this to be wholly erroneous.

The facts are, instead of the colleges being conducted in the interests of the profession, they are conducted solely for the purpose of glorifying and increasing the income of a few unscrupulous stockholders who are posing as the leaders of the profession and the disgraceful custom of offering all kinds of inducements, in order to get large numbers of students, of whatever kind or class, and then, after going through with a certain lot of forms and farcical examinations, turning them loose to prey upon humanity and disgrace the profession, is a condition of things which public opinion ought to suppress.

This thing has been winked at long enough. It is time to act, and I am proud that Minnesota is foremost in the ranks in the matter of legislation, and we are no longer to be the favorite dumping ground for the unscrupulous managers of the snide diploma mills, posing in the garb of respectability.

A diploma should mean a great deal. It should mean an infallible test for a man's fitness to practice dentistry; but it is absolutely no criterion as to his fitness. By reason of this wholesale

issuing of diplomas, the once proud name of American dentists is now a disgrace and laughing stock in all the countries of the globe. Read, if you please, Dr. Bonwill's article in the *International Dental Journal*.

I have seen negroes, Chinamen, Spaniards, Germans, graduate and receive their diplomas, who could scarcely speak enough English to pass the time of day, much less understand lectures abounding in difficult words and phrases; and in the same class, I have seen graduated fully sixty per cent of Americans who should have been debarred from graduation by reason of their defective mental qualification. And yet this thing has been and is going on to-day and will until each State shall make such restrictions as shall compel all who enter their boundaries to demonstrate their fitness to practice.

It is useless to wait longer for the colleges to reform by themselves, they have too many selfish interests at stake. Think of the condition of affairs when the profession must regulate the colleges! Think of the condition of affairs when one city can boast of sixteen diploma mills! Isn't it time for the profession to call a halt? Earnest men have worked long and faithfully that dentistry might be elevated to the dignity and importance which it demands. But talk of elevating when the profession is being annually flooded by a horde of ignorant incompetents. The combined efforts of pure journalism and State and local societies is as chaff before the wind in the presence of the harm which these loose, unscrupulous institutions are doing. Let each one remember that the profession is mightier than all the dental colleges combined and that the system of education should and must be subservient to it. We have a right to demand that the dental colleges be conducted honestly; from the profession the colleges must receive their recruits, and again to the profession must they give them back. I wish that every one could be thoroughly aroused to this matter. You would then know what many whom you have regarded as being leaders in dentistry are in reality, only selfish schemers, who are prostituting the profession for their own selfish ends.

We would not for a moment think of admitting to the membership of this society any dentist who would publish a picture of himself in the papers in connection with advertisements of the superiority of his patent methods, processes, etc.; but, I ask you, is it not just as consistent as for Deans and Secretaries of dental

colleges who publish their pictures and advertise their colleges in fully as rank a manner. In my opinion, such men in such colleges should be ostracized by the best element of our profession.

Again, any man who will attach his name to a diploma, knowing the candidate unqualified to become a member of the dental profession, is an enemy to dentistry and ought to be so regarded; and any dental college who shall cater for numbers instead of quality and fitness, ought to be boycotted.

Now, Mr. President and gentlemen, I have spoken without fear or favor in regard to this matter, for the reason that I think more of my profession than I do of my friends who are connected with dental schools. I have therefore spoken freely and frankly and when all shall do the same there will not be the least trouble in placing dental colleges in such a position that their management will bring the greatest good instead of the greatest disgrace to our fair profession.

I have carefully watched for fifteen years the doings of the colleges of this country and for six years I have been connected with the dental college, as you know. I have therefore, had good opportunity to understand the workings of colleges and I would not be understood as classing all alike, or all teachers alike. But I would be understood as saying, that without a single exception, so far as I have been able to learn, the tendency is to strive for large classes instead of fitness; this greed for students, or rather for what the students contribute seems to vary greatly with different schools. If I might be permitted one general classification, I would say, that it seems to me that in proportion to the age of the institutions as they now stand, is their disgracefulness and selfishness most apparent.

Now in regard to our own institution, the dental department of the University of Minnesota: It is my earnest desire that it shall be conducted in a manner that every dentist in this country shall feel proud of. That quality and fitness of the students admitted and turned out shall be its motto, wholly regardless of numbers, whether there be one or five hundred in the class it matters not, and I wish this society and the dental profession of this State to be at all times thoroughly familiar with the kind and class of work being done. You have a right to know, for it is to be conducted in the interest of your profession. You have a right to know, for it is a State institution and you are citizens and tax payers of the

State, and I hope you will take interest enough in this institution of the State to be present at many of the lectures and thoroughly familiarize yourselves with the work there being done. And if it cannot so be managed as to bear this investigation, then you should close its doors. On the other hand, if it is conducted as it should be and as I believe it will be, then you should be proud of it and give it your free and hearty support.

DR. SUDDUTH. I am fully in accord with the sentiments presented in the president's address. They came to us with double force in that they are expressed by one who has had considerable personal experience in enforcing our most excellent law. Minnesota leads in upholding the standard of dental education, with one of the very best laws ever inaugurated by any legislature and a school that requires a three years' graded course and an honest entrance examination which is high enough in its requirements to insure good material on its benches. I am fully in sympathy with that section of the law that relates to an examination of all persons presenting for license to practice in the State. I have long contended that a diploma should represent the standard of education in the college granting it, and should not carry with it the license to practice in any other State. The State of Illinois, for instance, should not be allowed to set the standard of education in the State of Minnesota, nor shall she. The internal management of each state so far as it does not affect the general weal detrimentally should be left to its own police regulations. There is a point, however, where the general government may step in and assert its paternal relations to the *United States*. Several new phases of this relation have been brought forward quite recently in the "original package" decision in the supreme court and some knotty questions of inter-state commerce. But the prevailing sentiment seems to be in favor of a let alone policy on the part of the general government. If this is the case in regard to grave problems relating to inter-state commerce and "original packages," how much more should it be so in regard to educational matters? It were better without doubt if uniform laws governing the practice of dentistry and medicine existed in all the States. I am fully in accord with the idea of unification but it should be a leveling up rather than a leveling down process.

There is only one basis on which it can be done, and that is, to ignore the diploma altogether and adopt a law

somewhat similar to the Minnesota law. The sooner we disabuse our minds of the legality of the so-called "vested rights" belonging to private corporations, especially when they are educational institutions, the better off will we be. If a State desires to grant special privileges to institutions within her border, that is a matter entirely her own, but don't let her try to force those privileges on a sister State without giving value received. We have felt pained at the position taken by some of our older institutions recently in threatening to overthrow the good laws of certain States because their diplomas had, in some instances, been refused. Not all graduates are of equal standing and it is not impossible that men, now and then, slip through even our best institutions, who are not as fully prepared as they should be. The best way to do is, require all graduates to pass before boards that are wholly disinterested in the "passing" of the candidate. Come up to the standard of our Minnesota institutions and all will be serene. Success to the State Board and let them raise the standard as high as they please. So long as the law is impartially administered we will meet its requirements in our teaching, when we cannot, then it will be time to complain.

DR. WEEKS: Mr. President and gentlemen.—You have heard what we intend to do, I think you may be interested in knowing what we have done, and I trust I may be relieved from any suspicion of egotism when I say that I think we have a right to feel proud of the results accomplished by the College of Dentistry—University of Minnesota; the first class of six was graduated this spring, five of these went before the State Board and all passed creditable examinations, part of them as good as have ever come before the board.

This is especially gratifying for this class was with us through the transition period from the old to the new regime and had many traditions which were not in harmony with the new order of things and while there never was open rebellion there was sometimes lack of interest and failure to appreciate many requirements which were instituted for the elevation of our standard. It may be we are in advance of the times and too ideal in our aspirations. This was true of our law, but even now we see its beneficial effect. Other States are thinking of falling in line and Prof. Sudduth assures us that they would not have considered this recent change had it not been for our law. When States have uniform laws which require

the examination of all applicants, then colleges will of necessity have a more uniform standard and diplomas will be granted *only on merit*.

Our aim has been in our school to prepare *every* graduate so that he would be able to pass any State Board in the country, also by retaining such work in the primary branches that any medical college in the country will grant the M. D. degree at the end of one winter course.

For these reasons we can not compete with many of the older colleges for students, for as long as all diplomas are worth the same the majority of young men will go where they can get them the easiest, but we can offer those young men who are willing to put in a little more time, opportunities to fit themselves to be an ornament to our profession.

DR. A. H. THOMPSON: Mr. President.—I have listened with pleasure to the two addresses, they have stated the condition of matters regarding the law very well and I desire to congratulate you and the State upon the law and the advanced position you have taken. It is universally acknowledged that the Minnesota law is an advanced step. It was somewhat startling at first to college men, but those who have the best interests and welfare of the profession at heart, rather than the financial success of any one college, recognize the importance of the step you have taken and the great benefit such a rule will be to the profession. We must acknowledge with shame that the colleges—some of the very oldest of them, our own Alma Mater—have been doing some very bad work. The younger and smaller colleges have, in some respects, been doing better work than the older and larger colleges, here is the advantage that the student can exercise personal attention where there are not so many, than where there is a crowd and the teaching is general rather than personal.

It would be better if the "Minnesota idea" would become general, and all examinations be conducted and diplomas be granted by an independent board. The State Board, as at present constituted, could not do this, where they do do this, now there is too much abuse and irregularity; but if the diploma granting power were conferred on a board separate from the college, the results would be much better.

[TO BE CONTINUED.]

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

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WM. H. ATKINSON.

One of the few veterans who was actively connected with the early history of dentistry in the United States, passed from life's arena, when Dr. Atkinson breathed his last at 41 East Ninth street, New York city, on April 2, 1891. There should be no sorrow when a man who has done life's work, and has done it well, lays down the armor and enters the enjoyment of peace in a life of eternity. The dental profession has cause for unmitigated joy that such a man has lived and devoted the best years of his life to her interests. It is doubtful whether any other has done as much for dentistry. We can hardly recall anything that makes the dentistry of to-day, with which Atkinson's name is not in some way connected. Nothing was introduced or suggested but it received his attention, and eventually his hearty approval or most earnest condemnation. It is true that he, like the race of which he was but a unit, should have often erred. Atkinson has done more for the unification of the dental profession of America than any other man living or dead. The general esteem in which he has been held by dentists everywhere, is attested by the many honors showered upon him by societies at home and abroad. His earnestness was infectious; there is nothing that he touched in which he could not interest some one who was younger or more active than he (in the latter years of his life); and thus into many young men he has instilled a desire to do their duty to their profession. His influence is at work everywhere, and it is safe to say that the profession will feel this influence for many years to come. Atkinson was a good dentist; many are the

dentists who have seen his work stand the test of more than thirty years. His relationship to the majority of his patients, was one of more warmth and interest than that brought about by the merely necessary business courtesies, and as a result of that, the general information that he was able to spread, has done much good.

It is but just, that such a man should not be long in following the loved one of his early years, who was the partner of his long life's joys and sorrows, for since the death of his wife, Atkinson was hardly the man of former years. He has earned his rest: for he has made the world better; he made happier the human race. To Atkinson the end was welcome for

"Death is the crown of life;
The king of terrors, is the prince of peace." •

A WORD WITH RECENT GRADUATES.

So many young men are just now entering the profession through the medium of graduation that a word to them at this season may not seem out of the way.

In the first place we wish to say to recent graduates that the serious part of your work is just beginning. It no doubt has seemed serious to you during the past few months when you have been devoting your energies to the acquirement of knowledge sufficient for graduation. You have had in your minds the possibility of failure and that has acted as an incentive to endeavor. But if you look at the matter in the right light you will discover that the calamity of failing in your final examinations is nothing compared to that of failing in your subsequent practice.

It matters not so much after all if you trip up on a certain question in chemistry, anatomy, materia-medica, etc. It is not altogether disastrous if the examiner finds a flaw in a gold filling, or discovers a misfit in a set of artificial teeth. It is in fact expected that you will make mistakes during your college course, and the chief function of your professors has been to correct those mistakes and direct you into proper methods. But the moment you leave the college doors and go before the world for its verdict you have assumed a responsibility out of all proportion to that which made you tremble for the verdict of your professors. The world is not so much inclined to overlook mistakes and you cannot afford to make any. It requires but very few failures to imperil your repu-

tation as a practitioner, and you must remember this one thing—that the world is suspicious of a young graduate. It will herald a mistake of his which if made by an older practitioner would be entirely overlooked. You are to be subjected to a desperate test and you must be cautious and courageous. You must rely for success entirely on your own efforts. During your college days you have had behind you your professors and demonstrators. They have always been at hand to check any errors, and to lend their advice in case of a dilemma. You will be deprived of this support from this on, and if a problem presents itself you must study it out alone.

In this connection let us give you one word of advice: Never do anything impulsively or blindly. If you have a critical case and are in doubt as to what is best to do—do not do anything. Never make a move in the dark. You had better leave a case entirely alone than run the risk of complicating it by a mistake. But you must not lay yourselves open to the censure of being beaten twice with the same kind of a case. Whenever confronted with anything out of the ordinary you should study the matter up so that you will understand it perfectly and not be in doubt when another case of a similar nature presents itself.

The one great error into which you are most likely to fall is to assume that you have acquired, in college, sufficient knowledge for the successful practice of your profession. Remember, at the very best, you have but mastered the rudiments. You have done well to do even this and you start your professional career much better equipped than was possible a decade or two ago. And yet if you stop at this and content yourselves with the mere foundation you will soon be left far behind by those who work year after year regardless of diploma, and whose main ambition is to gain that high professional attainment which every man owes to his calling.

Read your dental journals, attend society meetings, fraternize with your professional friends, and add year by year your mite—be it ever so small—to the progress of dentistry.

The DENTAL REVIEW gives you all a greeting, and extends a cordial welcome to the profession. May you never disgrace it.

C. N. J.

BILLHEADS.

A few months since we requested sample copies of billheads, at first they came in very slowly, only three coming during the first

month. Dr. John G. Harper and Mrs. Emma Eames Chase first responded with professional billheads. Up to this date we have not received a single copy of a dentists account sheet with a cut of teeth, or any extra space for a minute itemization of accounts. Either the method is changing or those who use the merchandising style of sheets for accounts choose not to let them be seen. Anything that will tend to make men more professional in their methods even in the making out of bills is welcomed as an advance. Our advice is to copy the second style of account presented on page 831, October number of the DENTAL REVIEW. On request we will send a sample of the sheet we use in our own practice which is considered very neat and attractive. In case the reader has any ideas on this subject which were not covered in our recent New York letter we will be glad to receive them. A paper on fees from the city or country dentist will also be welcome and very instructive to all who may read it.

DENTISTRY IN KANSAS.

It was our good fortune to be able to visit the city of Wichita, and attend the meeting of the Kansas State Dental Association last month. Kansas occupies an anomalous position—there is not a single dental college within her borders! At the last session of the Legislature a dentist who has resisted the enforcement of the very excellent law in times past, succeeded in getting the law changed to admit any one to practice after examination regardless of the fact, whether he had or had not attended lectures in a dental college. The profession to a man were opposed to this change, but what was the business of all, none attended to, so now the Board of Registration becomes an examining body. Result: the examination of one-course students, no-course students—any one who chooses to apply. Much work, nothing but growls if a man fails. Another year the Alliance men in the Legislature will not be so numerous, and perhaps the law can be changed back to its old-time reading.

* * *

We were very much pleased with the *personnel* of the dental society, and the general tendency shown to discuss matters of moment in an intelligent manner. Dr. F. O. Hetrick, the presiding officer (now the president-elect), was most energetic in doing

everything possible to facilitate the dispatch of business ; and Dr. Esterly, the retiring Secretary was omnipresent. The scholarly Thompson gave the society a paper, urging the necessity for a study of Comparative Dental Anatomy in a most finished manner ; and Dr. Theodore Stanley presented a most beautiful selection of *original* microscopical slides, showing the development of the teeth. Papers were read by Dr. J. D. Patterson, Drs. Davis, Mc. Carter and others. Drs. Hungerford and Hollingsworth gave two very interesting clinics on bridge-work, and Dr. L. C. Wasson gave a clinic with cocaine in the extraction of teeth. Dr. R. Matthews, a former Illinois man, was most careful in attending to the wants of the visitors ; and in fact one and all had a jolly good time, even though prohibition does *not* prohibit.

Dr. C. L. Hungerford has devised a pair of hollowed piano-wire tweezers with a sliding ring for removing broken broaches from the roots of teeth. The nippers are about one inch long and may be used with a firm handle of any length to grasp the broken end of the broach. R. I. Pearson & Co. ought to supply the profession with the above at a moderate price.

Dr. Hungerford advises the rolling out of copper wire into thin strips cut of suitable length, to take measurements of the necks of teeth when bands or crowns are to be made. They are neat, pliable and just the thing. We are delighted with the suggestion.

Drs. L. C. Wasson and A. M. Callaham succeed themselves on the Kansas Board of Examiners.

D. McKellops uses carbolic acid in the following manner: The one ounce bottle is placed in a water bath until the acid is melted, after which he fills the remaining space with Price's glycerine. This is then used in pyorrhœa pockets and also for inflammations or ulcerations of the mucous membrane of the mouth. If necessary the solution is diluted.

Dr. J. D. Patterson dries a root canal with burning alcohol after he has exhausted other methods of desiccating.

Roots were filled with lead and gold as early as 1659, according to Thos. Berdmore, Surgeon Dentist to the royal family, etc. Dr. McKellops has Berdmore's book in his possession, which verifies the above statement.

THE CROWN LITIGATION.

Elsewhere will be found mention of the successful issue of the "crown case" in the Supreme Court of the United States. Dentists are reminded that their efforts should not be relaxed, but this success should stimulate them to wipe out any festering sore that now afflicts their material welfare. More members of the Dental Protective Association are needed to continue the fight against all patents that have a taint of fraud in their issuance. Let the work begun continue to the end.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

To the Editor of the Dental Review:

Dear Sir:—There is nothing in the events of life that casts such a gloom for the moment over one's thoughts as to stand beside the lifeless body from which a great soul has just taken its flight. We found ourselves feeling thus on Friday A. M., April 3rd, we looked upon the closed eyes and the pale countenance of that face which we had become so accustomed to greet with animation and admiration. The mouth was closed; the voice was hushed. He was not there—he had risen. Involuntarily our mind followed him by imagination into the other existence.

The smoke of a great battle had vanished; everything betokened victory and peace. The long sleepless nights had ended—the Eternal day had dawned. The pilgrimages was over. Rest had come. And methought how well deserved it was and almost unconsciously we found our sadness changing into joy.

Thursday evening at nine o'clock, April 2nd, when the mortality of Dr. W. H. Atkinson put on Immortality, a great event had transpired in the ranks of our profession—one had fallen who could never be replaced. The measure of such a vacancy could only be estimated by time. While we will in a variety of ways miss him sorely, yet his value will become more and more apparent. May it be a constant source of gratitude that he was so long with us. There is no cause for mourning; he has gained, if perchance we may have met a loss.

The news of the doctor's demise may come as a surprise to many. To those who have seen him often it was evident that he was losing

ground, particularly since his oldest son, Dr. Clinton, was taken from him last May, since he had made slow progress in the recovery of his accustomed energy. We did think during December and January that his prospects for more vigor were bettering, but afterwards we felt impressed that he was not gaining. Since October 1, we had been daily associated with him in his office until February, and we took note of his bodily condition constantly. These four months were full of pleasure and profit to us although we were too often pained with the thought that it might be that the last days of his career were hastening to an end.

I recall many remarks that now impress us that he was drawing near the end which he was conscious was approaching.

He attended the last meeting of the Odontological Society in March, and made the speech of the evening in confirmation of Dr. Heitzman's claim of the reticulum theory.

His last attendance among his fellows was at the Brooklyn Society—and they heard him for the last time—we had not seen him for a week, and we were shocked to see how he had failed. He made his speech, and returned home before the meeting closed, being in the company of his daughter, Mrs. Crowell, and a lady friend. A Brooklyn gentleman sitting beside me, asked when he rose to speak who that gentleman was, and when told, he said, "I never saw such a change in one I had known, before."

The following Monday evening his youngest son, Dr. Will Atkinson, was suddenly taken from life; he had been taken to the hospital the day previous. The doctor was at this time so feeble it was decided to be unwise to inform him of the occurrence with all the attendant bodily debility fastened upon him, and it was soon that pneumonia developed and the scene was closed; and no ending could have been more quiet and peaceful, in full consciousness of the transaction.

For some cause the next morning's papers did not get the notice of his demise; only the *Herald* had a very concise obituary, which we append, it being short. The writer of it being a personal acquaintance and patient.

WILLIAM H. ATKINSON, M. D., D. D. S.—"Dr. Atkinson was one of the best known dentists in this country. He achieved fame as an original thinker and operator, and was a teacher of teachers in his profession. His death will be a loss to the great brotherhood of dentists, among whom he was regarded as an authority in all cases requiring surgical skill. He had been suffering from a severe attack of the grippe but no fears were entertained until yesterday morning, when

pneumonia was developed, and last evening he passed quietly away. Dr. Atkinson was 76 years of age, having been born January 23, 1815."

On seeing this notice we called at once and found an afflicted house. We informed Dr. W. W. Walker, and communication was numerously made in the city, and different parts of the country. We communicated with the publishers of the REVIEW, not knowing that the editor had returned. An immediate reply was received, and heartfelt sympathies were extended.

The funeral services on Sunday at 2 P. M., were held at the house, 41 East Ninth street, where the doctor has resided since May, 1863. We counted seventy brethren. Only the burial service was read. "Rock of Ages" was sweetly sung by a single lady friend of the family, and the body was committed to the dust.

After the last look had been taken, one by one we turned our steps each to his own place with a grasp of the hand and a few words, quietly leaving the remains with the family to be laid away privately on Monday morning in Woodlawn Cemetery, eight miles east of the city.

Dr. Walker, President of the State society, published an official invitation to all members to attend the funeral, in the city papers. The following named were in attendance: Drs. Northrop, W. W. Walker, S. G. Perry, Dwinelle, Lord, Morgan Howe, Delos Palmer, and Eugene, his brother, Jackson, Bogue, Davenport, Steward, Denison, Hoag, Hurd, C. E. Francis, Presler, Hudson, John Allen, George Allan, H. F. Bishop, formerly of Worcester, Mass., Merritt, Parmly Brown, and Parmely, Jr., with two Swiss dentists, W. M. Reynolds, Sere, Andrews, Todd, Downs, Minor, Weld, Hart, Oldham, Howland, Rhein, Mills. Drs. Wheeler and Canady, of Albany. Brooklyn: Drs. Mirick, Cook, Wm. Jarvie, Brewster, Pitts, Dickson, Wyman, Skinner, W. B. Hurd, Dickey, Holme Harryes, Geran, Walker, Reese, Baylis, and Curtis, of Rochester. New Jersey: Drs. Osmun, Levy, Luckey, Meeker, Stockton, Watkins, Hull, Eaton, Hawley, Holbrook, Richards, Adelsburgh, Barlow and Sill.

It will be recalled by the readers of these letters that we gave notice of the 76th birthday of the doctor, which occurred on the 23d of January, and suggested that it would be pleasant to congratulate him on that day. There were several messages sent by telegraph and letters, and his parlors were perfumed with flowers, the gifts of friends, giving no little cheer, which was so timely.

There is much connected with such an active career that can be turned to profit, and doubtless it will appear in the coming days. I have often said to the doctor in a general way that I wanted to live a few weeks after he had gone, to hear the speeches. The First District meeting coming first in the month, these will commence there.

We knew in a multitude of ways that the query has been, "What was his religious belief?" In a sentence, it was this : It was that Christ was endowed with a full measure of the spirit of God, and that we were like him, sons of God, differing only in this measure in degree, counting not that we had attained, but all we could do was to go forward in the light we had given each day ; and at the close be thankful that we had been faithful in a few things.

His daily motive was to do as much good as he could and as little mischief as possible. Much could be said of his early life in connection with his training for the duties thought by his parents to be his. We are all more or less familiar with his recognition of the source of his knowledge "the Angels," which he emphasized, and we think this is a trait worthy of our faithful adoption, *i. e.*, we do receive, from the source of knowledge.

The editor of the *Mirror* has quite a hearty editorial in this March number on "Newspapers and Dentists ;" so much that is sound it is causing not a little chit-chat pro and con. The present codified laws that holds its dictum over our organized bodies—and medical are doomed. The writing is on the wall that predicts its early expunging, and "don't you forget it."

We have met two very promising gentlemen from Switzerland, both doctors. Dr. Flacow, already a practitioner in Basle, of marked ability and of fine presence. He is here on a catching expedition, with a student, Lewis, and of course, Dr. Parmley Brown has caught on to him, and is (a) bringing him at the same time he is filling his gripsack full of his specialties. His unique crown with milled pin which can't be bent ; his new Fibro-cement for surface fillings. Dr. John Hitchcock has tucked in his Universal Disk Holder arranged for readily holding everything from a sand-paper to a corundum disk of the greatest thickness used in the engine.

Dr. C. M. Richmond has invented an economical crown with a platina jacket baked into the porcelain and in this for the pin or post, a nickel is dropped in and burnished easily to the form, and

we have a practical tooth that can be afforded for twenty cents, so they say.

Dr. W. S. Elliot, a gentleman of well-known ability, has gone on a trip through the South and West clinicing, with the glass filling and is meeting with hearty acceptance at a small fee. He is out of health. We wish him well. Special attention to the special work, and more is coming. It is equivalent to post-graduate teaching. It is such and it will be in demand as fast as skillful men make known their purposes, and all such work will help to magnify the importance of our calling. "Come over into Macedonia and help us."

The annual meeting of the First District Society occurring in April is looked upon as an off meeting. The attendance was quite small—twenty-seven votes was the largest number cast, and Dr. Norman W. Kingsley got fourteen of them for President and was declared elected.

The reading of the annual report of the clinical meeting caused not a little random discussion. It was thought that the committee assumed to indorse certain methods and spoke with some disfavor of others.

Dr. Kingsley accepted his election as quite a pleasing compliment, which we fully agree to be so. How true it is that when little is expected great opportunities are forced upon us. To be President of the First District Society is no small honor, for what society has had a more honorable record? But alas he who has acted so many years on its usefulness has vacated his place in its sessions, and it was brought to a realization when the venerable, valiant and vigorous Dwinelle rose to offer the resolution for appointing a committee to draft resolutions fitting for the loss of such a remarkable member as the endeared, W. H. Atkinson. Dr. Dwinelle was so overcome with emotion he could scarcely command words enough to complete his motion. All the time there was a painful silence pervading the room. Dr. M. L. Rhein made an amendment by asking that the committee be given power to recommend some fitting tribute to the memory of Dr. Atkinson. Dr. Rhein's tender tribute to the doctor was clothed in orderly language, and conveyed an exalted appreciation of him learned by a personal experience: he said that he was one who if appealed to for assistance, never seemed to consider his own convenience but turned

all his energies toward the one needing help, and thus proved himself a true brother. We say "Amen" to that.

Drs. Dwinelle, S. G. Perry, and M. L. Rhein were designated the committee to report at a future meeting.

Dr. Hodson, the retiring president had a complimentary vote given him sufficient for a reelection but he preferred to be retired. The doctor's administration has been a very creditable one, and so far as we know, a very acceptable one. Most of the officers during the past year have been of the younger class of men but they have been faithful in all the duties. We predict for Dr. Kingsley a prosperous and profitable term. Whatever the doctor puts his hand to he does with an ambition which does not note any possibility of defeat. He is best known as an artist, so we will expect an artistic administration of the First District Society.

The clinical programme was carried out according to arrangement with about sixty in attendance.

Dr. C. C. Carroll made a successful exhibition of casting aluminium, and marked interest was manifested in all the detail.

Dr. Geo. Evans made a very interesting demonstration of heat and antiseptics with non-coagulants of albumen in treatment of pulpless teeth a la Harlan. Judging by the eager listeners about him he gave them something worth listening to, always proving that when one has anything to say he will find enough to listen.

Dr. Canady of Albany, gave a very neat evidence of his painstaking skill in his combination of tin and gold finishing by strips of thick gold with the electric mallet. He is a very systematic operator.

Dr. Burkhart, of Dansville, N. Y., gave a good common-sense operation, hand pressure, and automatic mallet assistance, using gold and tin felt. The operation carried conviction of its virtue by all the movements of the operator. Let all young men in particular who read this remember that the value of an operation depends very much upon the man who handles the instruments.

We met Drs. Wm. B. Keyes and Rambo, the first, brother of Dr. Edward Keyes, we made mention of in one of our former letters. They all sailed for home to-day, April 15th, in Rio Janeiro, Brazil. There they have had a successful practice for many years. We have made a very pleasing acquaintance in Dr. Flacklow who gives us a very flattering account of the polyclinic they have at home, and he tells us that the government favor them officially and

financially. If this can be done in Switzerland why not in liberal America?

Dr. Oliver exhibited something new in weighted rubber which was quite thin and delicate in structure, the weighty material being a homogeneous mixture.

About sixty gentlemen partook of the one dollar *menu* at Newark this month. The visitors present were Drs. Bogue, Kingsley, Evans, Walker, Stabater and Mills, of New York.

Prof. Winder, a special guest, was just looking, as we told him, handsomer every day; he is getting older. He is a good specimen of a reconstructed Virginia Rebel, but we did not see him *rebel* at anything on the par excellent bill of fare. When one can get such a choice supper for a dollar, a good many are querying: "Why pay \$10, \$15 and \$20 for one almost as good?"

Dr. Graves, a medical man, gave a very excellent paper on "specialties." He sought to be "grave" but did not succeed. It certainly was one of the most stingingly cultured sarcasms that it has ever been our fortune to listen to. He first magnified the value of specialties, including our own as from the standpoint of many, also his own, and after being able to show from the general tenor of discussions and outside conversations of dentists how highly and vastly important a dental specialty was considered to be then contrasting it with his own, he dropped back to the *ignominious* importance advocated by a large number of our body which was included in this commonly expressed phrase "I can fill a tooth as well as any one." Then asking in a very satirical manner "Is this great specialty embodied in that idea alone?"

Is there no importance to be attached to the condition, preparation and selection of materials. As Dr. Bogue tritely said, "it was one of the most satirical castigations put in the smoothest language that he had ever heard." It points a moral not to be overlooked.

The Odontological Society had an attack of lock-jaw this month. Bacilli did it, so said Dr. Curtis who has just returned from Berlin—"to the contrary notwithstanding." Every doctor that has returned from Berlin during the last eight months has brought over privately prepared Bacilli for his own particular use, so Doctor Curtis tried inoculating it on the os; between them and the First district there is a heap of limping and it seems to have taken the *heart* all out of them. April being a fickle month and the State

meeting is so full of prospective profit we think "All the airy persiflage" will all be gone by the June meeting. The May meeting of the First district must be an off one for it comes in contact with the Albany meeting and by June all the dust will be laid and roses and perfume will be the go. We hope to see *all* members in their respective places of duty, with a boutonniere in his lapel "duty before pleasure." It is said all organized bodies are exposed to attacks of a microbe especially when any irregularity is lurking about as it produces a favorable soil for propagation. The season tends to these things, so many change of tenants, with a tendency decidedly up town, a big stretch from 9th street to 59th street. Now our beloved Dr. Atkinson has left us, forty-one E. 9th street will no longer attract the many visiting New York. As we now pass the house and see the closed shutters and the bill "To Let" we draw a sigh and quicken our step and more and more we realize our loss, yet we think of his great gain.

All the societies are arranging for fitting notice of the vacancy that has occurred in our ranks. A memorial committee of ten is proposed to confer with the entire profession relative to a suitable and lasting remembrance of his great value to the dental profession. It is hinted that something of an educational endowment will be secured. We do know that nothing could be more in keeping with his desire.

Dr. S. G. Perry may be truly called a specialist in producing fine instruments with which he associates a cultivated ingenuousness that is worthy of marked attention. He exhibited a cornucopia of these products at the Odontological Society's April meeting. First some fine file-cut finishing burs that give a dead finish that is a pleasure to see; second some Salmon Automatic Mallets altered over by his direction, making the spring softer in its action, placing over the barrel a semi-vulcanized sheath for easier feel for the fingers and varying the length of points making an accommodating adjustment for getting nearer to some operations, and a longer reach for others. To see his office and note the skill in this line is a stimulus that many need. We see a large field of usefulness in ferreting out these hidden things of so much value and in these letters we will delight in emphasizing them. At the Brooklyn Society a committee was selected to draft resolutions commemorative of the demise of Dr. Atkinson. Drs. Mirick and Brockway being selected, the purpose is to engross them and

hang on the wall of the society room accompanied by a photograph, also to transmit a copy for publication and to the family. Dr. Atkinson was an active member of this society from the second meeting in 1867. During all these years he has maintained an active interest in all that could promote the growth and prosperity of the society. Few members of that society little knew the joint devotion he gave to the author of the society. There has been a time in the history of this body when it had a name for usefulness that no other local society has ever attained. In all our intimate acquaintance with the doctor we have never known him so heartily devoted to an object as he was to the Brooklyn Dental Infirmary. Proof is not at all lacking for this statement. He emphasized the importance of this institution everywhere he met his fellows, as an adjunct for teaching, of transcendent importance and he fully anticipated that out of it would be an outgrowth idealizing his pet method of instruction "letting the case tell its own story."

Those who heard Dr. Atkinson's last speech, which was at the Brooklyn society in March, will recall his tender allusion to the defeat of his favored desire. All through the winter he confidently felt that a like project would come out of the offer made by Dr. Boedecker—\$5,000 toward starting an institution that would carry an educational auxiliary tendency by an ultimate connection of a dental hospital. And in the last two months of his life he expressed bitter sorrow over the hopeless prospect of seeing it consummated. What nobler and more fitting memorial could be established by the five societies adjacent to New York? Such a devoted life as Dr. Atkinson's has evinced to these bodies of men, adding all honor to them, would it be too much to so honor his memory? Many friends of our "Oral Gardner," Dr. Clowes will be glad to know that during the last four weeks he passed the serious ordeal of a surgical operation in the abdominal region.

Dr. John B. Rich, of Washington, D. C., for forty years in practice in New York, has also by his athletic ability loosened the hold of la grippe since his attendance at the Patriarch's banquet. Death shadowed him, but muscular fiber and powerful nerve drove him back for a time. He has already passed his eighty years and is in active practice. He made one of the most vigorous speeches at the banquet. Dr. Fuller, of Peekskill, a patriarch, has passed on to the bourne to which all are travelling, and more are nearing the goal. Activity to the end is grand, it is a blessing. Ex.

REVIEWS AND ABSTRACTS.

DENTAL LAW OF NEW HAMPSHIRE.

AN ACT

To Establish a Board of Registration in Dentistry.

Be it enacted by the Senate and House of Representatives in General Court convened:

SECTION 1. The Governor, with the advice and consent of the Council, shall appoint three skilled dentists, of good repute, residing and doing business in the State, who shall constitute a board of registration in dentistry; but no person shall be eligible to serve on said board unless he shall have been regularly graduated from some reputable medical or dental college duly authorized to grant degrees in dentistry, or shall have been engaged in the practice of dentistry for a period of not less than ten years previous to his appointment. The term for which the members of said board shall hold their office shall be three years, except that one of the members of the board first to be appointed shall hold his office for the term of one year, one for the term of two years, and one for the term of three years respectively, and until their successors shall be duly appointed and qualified. Any vacancy occurring in said board shall be filled by the Governor in conformity with this section; and any member of the board may be removed from office for cause by the Governor, with the advice and consent of the Council.

SECT. 2. The board shall choose from its number a president and Secretary, and it shall meet at least once in each year. Two of said board shall constitute a quorum.

SEC. 3. Within six months from the time this act takes effect, it shall be the duty of every person who is at that time engaged in the practice of dentistry in this State, or who has received a dental degree from some college, university, or medical school authorized to confer the same, or shall have obtained a license from the New Hampshire Dental Society, to cause his name, residence, and place of business to be registered with said board, who shall keep a book for that purpose. The statement of every such person shall be verified under oath in such manner as may be prescribed by the board. Every person who shall so register with said board, as a practitioner of dentistry, shall receive a certificate to that effect,

and may continue to practice without incurring any of the liabilities or penalties provided in this act.

SEC. 4. All persons not provided for in section three may appear before said board at any of its regular meetings, and be examined with reference to their knowledge and skill in dentistry and dental surgery ; and the board shall issue to such persons as it finds to possess the requisite qualifications, a certificate to that effect.

SEC. 5. The said board shall charge each person receiving a certificate the sum of fifty cents, and each person appearing before them for examination for a certificate of qualification a fee of five dollars in case such certificate shall be granted. Any person failing to pass a satisfactory examination shall be entitled to be re-examined at any future meeting of the board. The board shall make an annual report of its proceedings to the Governor by the thirty-first day of December in each year. All fees received by the board shall be paid annually by the Secretary of the board into the treasury of the State.

SEC. 6. The compensation and all necessary expenses of the board shall be paid from the treasury of the State. The compensation of the board shall be five dollars each for every day actually spent in the discharge of their duties, and their necessary expenses in attending the meetings of the board. Such compensation and expenses shall be approved by the board and sent to the State treasurer, who shall certify to the Governor and Council the amounts due ; *provided*, that the amount so paid shall not exceed the amount received by the treasurer from the board in fees as herein specified, and so much of said receipts as may be necessary is hereby appropriated for the compensation and expenses aforesaid.

SEC. 7. Any person who shall falsely claim or pretend to have or hold a certificate of license granted by any board organized under this act, or who shall falsely, and with intent to deceive the public, claim or pretend to be a graduate from any incorporated dental college, or who shall practice dentistry without obtaining a certificate as provided in this act, or who shall violate any of the provisions of this act, shall be deemed guilty of a misdemeanor, and upon conviction shall be fined not less than fifty nor more than one hundred dollars for each and every offence.

SEC. 8. Nothing in this act shall apply to any practicing physician who is a graduate from the medical department of any incorporated college.

SEC. 9. This act shall take effect upon its passage, and all acts and parts of acts inconsistent with the provisions of this act are hereby repealed.

TOOTH CROWN LITIGATION.

The following is taken from the *New Haven Register* of April 28, 1891. We presume that this will end that part of the labors of the managers of the Dental Protective Association which is of such great importance to the dental profession at this time :

TOOTH CROWN LITIGATION—THE U. S. SUPREME COURT DECLARES THE PATENT INVALID—A FINAL VICTORY FOR DR. GAYLORD.

The supreme court of the United States probably puts an end to all litigation over the alleged crown tooth patent by declaring that patent invalid in the suit of the International Crown Tooth Company of New York against Edward S. Gaylord, the dentist of this city. The decision which was handed down yesterday is quite a feather in Dr. Gaylord's cap as well as that of Mr. S. G. Gordon, C. K. Offield, Drs. Crouse and Northrop, and John K. Beach, who were pitted against the famous patent law firm of New York, Dickerson & Dickerson. The suit has been hanging fire in the courts for six years, waiting for the slow moving wheels of justice to revolve around to it, and its salient features are pretty thoroughly known among the dental profession. But the suit is also a matter of general public interest, originating as it did from the so-called Richmond crown tooth process, which C. M. Richmond of New York claimed to have invented between nine and ten years ago. Mr. Richmond created no little interest among the dental profession by the process, which consisted of mounting a porcelain tooth to a root by means of a gold band. It was Mr. Richmond's custom to teach dentists his process, and on one occasion, about eight years ago, he spent an entire day with Dr. Gaylord, giving him instruction in the new process, and for which instruction he was well paid by the doctor.

Later Mr. Richmond took out a patent for his invention and sold it to the International Crown Tooth company. This company immediately assumed its rights under the patent and demanded a royalty from all dentists who were using the crown tooth process and issuing licenses to those who desired to use it. Dr. Gaylord claimed that he had bought his right to use the process and refused to yield to the demands of the International Co. Accordingly in January, 1885, a suit was brought against him to enjoin him from using the patent. A trial was held in the United States circuit court in this city in April, 1887, Judges Shipman and Wallace hearing the case. It is argued by E. N. Dickerson, Sr., and E. N. Dickerson, Jr. for the plaintiffs and John K. Beach for the defendant.

The judges declared the patent invalid—a signal victory for Dr. Gaylord.

The plaintiffs then appealed and the case went on the trial calendar of the United States supreme court, and remained there, as cases generally do, until the court was able to reach it. A year or two later, while the case was still on the docket waiting trial, Attorney Dickerson died.

The case finally reached an argument before the supreme justices three weeks ago. Attorney Dickerson, Jr., argued for the plaintiffs and Attorney Beach ap-

peared for Dr. Gaylord, being assisted by Attorney Offield of Chicago, who represented the Dental Protective association.

The justices reaffirmed the decision of the circuit court, Judges Shipman and Wallace, in declaring the patent invalid, Justice Brown writing the opinion.

There have been many litigations over the crown tooth process, and Mr. Richmond himself got into so much trouble over it that he spent a year in Ludlow street jail in consequence. He was sued by the International Crown Tooth Co., soon after they bought his patent, and refused to obey a preliminary injunction issued by the court. For this refusal he was committed to jail for contempt. It is said that Mr. Richmond was not the inventor of the process, but a dentist named Beers of California.

PAMPHLETS RECEIVED.

Double Fracture of the Lower Jaw. Read before the Chicago Medical Society by Truman W. Brophy, M. D., D. D. S.

W. D. Miller, A. B., Ph. D., M. D., D. D. S. By W. C. Barrett, M. D., Buffalo, N. Y. Reprinted from the *Dominion Dental Journal*, March, 1891. This is a biography with a portrait of the well-known scientist.

DENTAL COLLEGE COMMENCEMENTS.

HOWARD UNIVERSITY.—DENTAL DEPARTMENT.

The fifth annual commencement exercises of the Dental Department of Howard University were held in conjunction with the the medical and pharmaceutical departments at the Congregational church, 10th and G streets, Washington, D.C., on Wednesday evening, April 15th.

The degree of Doctor of Dental Surgery was conferred on the following named (2) graduates:

J. Harry Madert, District of Columbia.

Eugene Gaffey, Connecticut.

COLLEGE OF DENTISTRY OF THE UNIVERSITY OF DENVER.

The third annual commencement exercises of the College of Dentistry of the University of Denver, were held in connection with those of the Medical and Pharmaceutical departments, at the Trinity M. E. Church, Denver, Colorado, on Tuesday evening, April 14, 1891.

The annual address was delivered by J. C. Davis, M. D.

The charge to the graduating class by P. T. Smith, D. D. S., Dean.

The number of matriculates for the session was thirteen.

The degree of D. D. S. was conferred on the following (5) graduates by Chancellor McDowell, of the University of Denver:

W. A. Armstrong, New York,	R. S. Clark, Illinois,
James R. Donaldson, Colorado,	J. S. Donaldson, Colorado,
E. C. Hember, England.	

ROYAL COLLEGE OF DENTAL SURGEONS OF ONTARIO.

The annual commencement exercises of the Royal College of Dental Surgeons of Ontario were held in the Normal School Hall, Toronto, on Tuesday, April 7, 1891.

The valedictory was delivered by W. Richardson, L. D. S., and the address to the graduates by J. Taft, M. D., dean of the Dental Department of the University of Michigan.

The following graduates were admitted licentiates of dental surgery, the certificates being presented by H. T. Wood, M. D. S., president of the Board of Directors, viz:

H. D. Boyes	Thos. Coleman.
W. F. Corbett	O. W. Daly
S. W. Frith	C. D. Green
G. H. Henderson	J. E. Holmes
E. R. Howes	C. W. Lennox, D. D. S.
C. H. Lount	O. Lillie
Jas. Letherdale	G. S. Martin
A. H. Mabee	Jas. McBride
H. S. McLaughlin	F. R. Porter
W. Richardson	J. J. Sinon
M. J. Sisley	H. J. Stingle
H. R. Thornton, D. D. S.	A. T. Watson, D. D. S.
J. E. Wilkinson	W. R. Winters
G. F. Wright.	

All of the Province of Ontario.

President Wood also conferred the degree of Master of Dental Surgery (M. D. S.) upon Thomas Henderson, L. D. S., D. D. S., Toronto; Orlando H. Zeigler, L. D. S., London; W. A. Leggo, L. D. S., D. D. S., Ottawa. Total number of students in attendance during the session, 68.

UNIVERSITY DENTAL COLLEGE.

The second commencement exercises of the University Dental College—Dental Department of the Northwestern University—were held at Central Music Hall, Tuesday, April 28, 1891. The valedictory was delivered by Arthur Robin Edwards, A. B., M. D. The charge to the graduates by Professor N. S. Davis, M. D., LL. D. The degree of Doctor of Dental Surgery was then conferred on the following named (4) graduates: Ellsworth Goldthorp, William Edward Harper, Alexander Clarence Murchison, William Ballentine Winget, A. B.

UNIVERSITY OF PENNSYLVANIA—DEPARTMENT OF DENTISTRY.

At the annual Commencement Exercises, held Friday, May 1, 1891, at the American Academy of Music, Philadelphia, the Degree of Doctor of Dental Surgery was conferred by William Pepper, M. D., LL. D., Provost, upon the following named gentlemen :

Adamy, W. Lynn, New York.	Levkowicz, Marcus W., Costa Rico.
Antoine, Rudolf, M. D., Austria.	McCall, Frederic W., New York.
Arrington, Wm. T., Jr., Tennessee.	McKee, J. Atkinson, Pennsylvania.
Barlow, Myron, Massachusetts.	MaGuire, Michael, Pennsylvania.
Barnard, George M. C., Massachusetts.	Mayer, J. Frederic, Pennsylvania.
Barnes, Charles H., Pennsylvania.	Miller, Archibald, Pennsylvania.
Beers, Arthur H., M. D., Canada.	Müller, John Henry, Switzerland.
Boennecken, Henry, M. D., Germany.	Naramore, Frank L., South Carolina.
Booker, Warren E., Massachusetts.	O'Conner, Patrick J., Pennsylvania.
Borja, Arturo, Mexico.	Ossa, Louis E. de la, U. S. of Col.
Brenizer, William I., Ohio.	O'Sullivan, Richard B., Canada.
Brown, Oswald M., Illinois.	Paynter, Geo. Janvier, Pennsylvania.
Burnett, James R., Illinois.	Porter, Alfred H., Australia.
Caldwell, Frank L., New York.	Porter, Frank C., England.
Caldwell, Obe B., Kentucky.	Putnam, Leon E., Pennsylvania.
Carpenter, Elliott R., Michigan.	Rauch, Louis E., Pennsylvania.
Chesebrough, Henry E., New York.	Rice, Charles A., New Jersey.
Chupein, Charles P., Pennsylvania.	Rounds, Louie J., New York.
Clearwater, Herbert B., Pennsylvania.	Rüssli, Jacques, Switzerland.
Cox, Arthur Brooks, Australia.	Sallada, Earle J., Pennsylvania.
Cregan, William H., Massachusetts.	Sayres, B. Franklin, Pennsylvania.
Darragh, James S., Pennsylvania.	Schiffmann, Ernst, Switzerland.
Davis, Charles H., Pennsylvania.	Schwacke, Joseph W., South Carolina.
Dilts, Charles H., New Jersey.	Siddall, William A., Ohio.
Dreher, Augustus H., North Carolina.	Smith, Fred A., New York.
Fay, Theodore Sedgwick, Germany.	Smith, Julian, New York.
Fetscherin, Edward, Switzerland.	Speakman, William C., Delaware.
Fogg, J. Milton, Pennsylvania.	Stephan, Louis J., Wisconsin.
Frey, George J., New York.	Stoppani, Giovanni A., Switzerland.
Gibbs, C. Franklin, Connecticut.	Tillotson, Charles H., Illinois.
Giles, William J., Canada.	Tinkham, Charles J., Jr., Illinois.
Green, Edson M., Pennsylvania.	Townsend, William B., Pennsylvania.
Haines, Samuel S., New Jersey.	Volk, Robert W., Massachusetts.
Haines, William H., Ohio.	Watts, Clarence V., Iowa.
Hampe, Karl, Germany.	Waugaman, William H., Pennsylvania.
Holder, Thomas, New Hampshire.	Whitbeck, Theodore H., New York.
Howe, Fred B., New York.	White, Elmer B., New York.
Jacobi, Sidney F., Indiana.	Wilson, C. Herbert, Pennsylvania.
Larkin, Edward V., Pennsylvania.	Wiltbank, John C., Delaware.
Laros, Henry M., Pennsylvania.	Woodbury, George F., Pennsylvania.

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Evans, Milton H., Pennsylvania.
Root, Clarence M., New York.

Rossbach, Edward E., Germany.

James Tyson, M. D., delivered the annual address.

Total number of students session 1890-91, 206.

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UVALDE, TEXAS, March 24, 1891.

To the Editor of the Dental Review :

SIR.—We wish very much to obtain your answers to the following questions.

A. In many cases I find great difficulty in filling roots of bicus-pids and molars on account of their small size and have many times been unable to fill them with satisfaction to myself. Will you please describe a method by which this difficulty may be overcome ?

B. A gentleman 45 years of age, trying to wear a partial superior plate of six front teeth is so troubled by the plate gagging him he is unable to wear it. The plate is light and short as can be made. What am I to do ?

C. A lad 12 years old had two-thirds of his left incisor (inferior) broken off, and the pulp being exposed and painful, was removed. The other incisors and left molar are in place, but the cuspids are not erupted and the bicus-pids are a trifle crowded. What is the best thing to do with the broken incisor ?

Trusting you will favor us with your answers, I beg to remain
Very truly yours,

E. N. FRANCIS.

ANSWERS.

A. If you do not attempt to enter the root canals until you have enlarged the entrance to the pulp chamber and the pulp chamber itself as much as you intend to, it is seldom that all the root canals cannot be entered, provided no attempt to drill or otherwise to enlarge them has been made. In persons less than thirty years of age this can be done almost invariably. Do not use any drug that will coagulate the contents of the pulp canals. If all of the root canals can not be entered with facility, introduce eucalyptol and leave it for several days, it will pass into the canals by means of capillary attraction and the canals can be much more readily entered. If after diligent and intelligent search a root canal cannot be fully traced to the point of its supposed exit from the root (not necessarily the apex), saturate as far as possible with eucalyptol, and pump into it chloro-percha, using either, gutta-percha or oxyphosphate or some other means to bring pressure on the

soft chloro-percha and thus force it into the canal. It is within safe limits to say that a root canal which can not be entered at all, or only partially traced by a broach whose holder is in skillful hands may remain unfilled or only partially filled, and cause no future concern.

B. 1. Make a narrow plate, perferably of gold, and attach with clasps to the remaining teeth.

2. In course of time, the feeling of nausea, often quite annoying at first, is easily overcome, especially, if the patient makes a practice of closing the mouth at once when the sensation is first noticed.

3. Make a removable or permanent bridge.

C. If the cuspid and bicuspid will fill the space completely, or can be made to do so by regulating, extract the root, but if there is the least doubt, the safest at the present is to crown the root and retain it until the cuspid is in place, and then determine what will be the best procedure at that time. [EDITOR.]

MEMORANDA.

Tennessee now has a Dental Law.

Dr. Geo. G. Lewis, an old resident of Chicago, died recently.

Dr. L. M. James, of Ypsilanti, Mich., visited Chicago last month.

Colorado Dental Association meets at Denver, June 3, 4, 5, 1891.

Texas Dental Association meets at Waco, May 26, 27, 28, 29, 1891.

The Northern Ohio Dental Association meets at Oberlin, Ohio, May 12th to 15th, 1891.

The Kentucky State Dental Society will meet in Louisville the first Tuesday in June, 1891.

Iso-cocaine is a local anæsthetic more powerful than hydrochlorate but it is irritating to the mucous membrane.

Will you stop working on Saturdays at one or two P. M. and go fishing? We will try it again this year, beginning June 1, as usual. Try it.

When is a man like a telescope? When you draw him out, of course.—*Pittsburg Dispatch*.

Also when you shut him up, of course.

Drs. Bogue & Co., American Dentists, announce their removal from 73 Boulevard Haussmann to 74 Boulevard Haussmann.

Paris, April 15, 1891.

At the meeting of the Kansas State Dental Association held in Wichita, Kas., April 28 to May 1, the following officers were elected for the ensuing year: F. O. Hetrick, president; J. A. Roberts, first vice-president; R. Matthews, second vice-president; R. A. Wasson, treasurer; A. Doud, secretary. Fort Scott was chosen as the next place of meeting.

Dr. E. E. Hughes, of Des Moines, Iowa, is still in the city under treatment for his injured eye, with great encouragement for its ultimate recovery, which good report his friends will be pleased to hear.

"Doctor, I came to see about my brother." "What is the matter with him?" "One of his legs is shorter than the other, and he limps. Now what would you do in a case of that kind?" "I am afraid I should limp too." *Texas Siftings*.

The eighth annual meeting of the South Dakota Dental Society will be held at Aberdeen, commencing June 9, continuing three days. A good programme is provided and we invite dentists from other States, and especially our twin sister on the north to meet with us. The State Board of Examiners will meet at the same time and place.

O. M. HUESTIS, Secretary.

The new industry of camphor production gives promise of being permanently established in Florida. It is believed that in ten years' time there will be more camphor trees than orange trees in Florida, and that the camphor industry will be more profitable than that of sugar. It is said that the camphor obtained from the Florida trees approaches more nearly to that of Japan than to Chinese camphor, since the odor of safrol is distinctly recognizable.—*Ex*.

Among the conundrums given this week at an evening party were: Why are monkeys the most intellectual animals? Because they are educated in the higher branches! What is the difference between a bomb and the Prince of Wales? One is throne in the air and the other is heir to a throne! With whom do the mermaids flirt? With the sea swells of course! It goes without saying that those who go in for erudite essays and things will vote it all exceedingly frivolous but to ordinary mortals who are in a state of receptivity, and who are just ready to be easily amused, it is a happy way to begin the evening.

The National Association of Boards of Dental Examiners will hold its annual meeting at Saratoga Springs, N. Y., on Monday, August 3, 1891, at 10 A. M.

It is important that the Board of every State in the Union that has a law regulating the practice of dentistry be as fully represented as possible. This association has immense responsibility and it ought to have the benefit of the wisest and most discreet counsel possible. It is hoped that every Board having memberships in this body will be represented and that those that have not yet become members will certainly do so at this meeting.

Matters of great interest and importance will come before the meeting.

Respectfully,

J. H. MARTINDALE, Secretary.

J. TAFT,
S. A. GARBER, } Committee on "time and place of meeting."
F. A. Levy, }

THE AMERICAN DENTAL SOCIETY OF EUROPE will hold its 17th meeting at Heidelberg on the Neckar, in the Schloss Hotel, August 3d, 4th and 5th, 1891. Officers for 1891: President, Dr. Wm. R. Patton, Cologne; Vice-President, Dr. I. B. Davenport, Paris; Treasurer, Dr. C. H. Adams, Frankfort a M.; Secretary, Dr. Lyman C. Bryan, Basel, Switzerland. Executive Committee: Drs. Patton, Wetzels and Adams. Membership Committee: Drs. Davenport, Jenkins and Miller.

Dr. Erich Richter, the editor of the *Journal für Zahnheilkunde* in Berlin, now conducts a dental policlinic at No. 2 Chaussee strasse, in that city.

The *Schweizerische Vierteljahrschrift für Zahnheilkunde* is a new dental journal published in Switzerland under the auspices of the Swiss Odontological Society. The first number is creditable and appeared in March, 1891, in the joint editorship of Prof. Dr. C. Redard (French editor), Geneva, and Dr. Theo Frick (German editor), Zürich.

We publish the following comments on the relation of the dental to the medical profession from the pen of a prominent and level-headed dentist. "I want to enter a protest against this Uriah Heep sort of humility in regard to the lack of culture among the dentists. I believe they will compare favorably with any profession on earth in general culture, socially, morally, intellectually. Some one said that a dentist could not talk anything but shop when he was out in society. When I accidentally get into a *crowd* which imagines itself society and they want me to look at their new store teeth I *quit*. I draw the line at that. I might give the young mothers a few points on teething if they crowded me pretty closely. But no one ever heard me announce myself as a dentist or undertake to amuse the company by describing my method of taking tartar off of some old duffer's old snags. Snyder says he feels humiliated when he is called doctor and then has to acknowledge that he is *only* a dentist, and it is owing to the *assinity* and general stupidity of the Fathers of dentistry that prompted them to call themselves Doctors—when they were *ONLY* dentists, and that *is* what we are, and why not say so. The title is like the powdered wig of the English barrister: it does not deceive anybody. I think the English plan is much more dignified—just notice this Mr. L. C. Duval, *Dentist*. In that way I might be mistaken for a gentleman but *never* for a doctor, and if my calling card only bore the legend Mr. L. C. Duval (rather than Dr. L. C. Duval) I might escape many embarrassing questions as to the general health of my neighborhood, and then if I had sense enough to keep quiet I might be able to pass an evening in the society of gentlemen composing some of the higher professions. But seriously, I believe if we gave up the idea of being the tail to the medical kite and stand on our own dignity that we would certainly retain our own respect and I am satisfied that the field is so broad and the character of the gentlemen of such a high order as a class that we could safely take rank with the professions as a distinct 'Learned Profession.'"

The following is part of a letter written by Dr. Reeves Jackson regarding the "Sacred Tooth of Buddha" kept on the Island of Ceylon: * * * The Perahera is an event of great importance among the Hindoo Buddhists, and it is produced with great pomp and elaborateness at Kandy, the former Capital of Ceylon and the home of the Dalada Maligawa, or Temple of the Tooth. * * *

The doors were opened and we two only permitted to enter. We found ourselves in an ante-chamber or hall, about thirty feet square, the ceilings of which was supported by numerous stone pillars, and the spaces between which were occupied by tables loaded with flowers. These were for sale, to be used as votive offerings. Passing through the hall we entered a small shrine, at the further end of which were several images of Buddha. One of these was especially noticeable by its grotesqueness. It was made from wood, painted in many vivid colors, and profusely decorated with precious stones and strings of beads. Another image,

far more curious and interesting, was cut from a single immense block of crystal. This treasure was enclosed in an exquisitely-wrought cabinet of silver and ivory, the metal portion being curiously worked, and the other almost black with age.

From here we ascended a narrow and difficult stone stairway to a landing above. At the end of the landing was a massive door of dark wood, richly inlaid with silver, gold, and ivory. Except upon the rarest occasions this door is kept closed. It was now open, however, and after passing through the doorway we entered a small rather dark chamber which contains the Sacred Tooth—the most highly-valued relic of the Buddhist God in the world. It is guarded in the most careful manner. The shrine containing it is surrounded by thick iron bars strong enough to imprison a tiger. On this occasion it was lifted out from its usual resting place and was under the vigilant eyes of armed policemen. In front of the table upon which the casket rested was a plain metal box capable of holding a bushel, having slats running from one end to the other, arranged like a Venetian window-blind. This was for the purpose of receiving floral and monetary offerings, and if it happened that you failed to notice this object your attention was very promptly and significantly called to it. Indeed, although I had always understood that Buddhist priests were not permitted to receive money, and that consequently it would be an exhibition of very bad taste to offer it to them, I have never in any religious establishment received so many urgent invitations to shed rupees or their equivalent, or seen so many convenient receptacles for them, as I did on that occasion in the Tooth Temple.

The outer shrine or case of the Tooth was bell-shaped and silver-gilt. Within this were six other shrines, or cabinets, of similar shape, decreasing in size, one within the other. They were of pure gold and ornamented with cat's-eyes, rubies, pearls, and sapphires. The last two cases were of pure gold and almost covered with square-cut rubies. The smaller of these contained the Sacred Tooth. I examined it closely enough to satisfy myself that it was not a tooth at all, although in general appearance it resembled a boar's tusk that had seen service. It was a tapering piece of ivory an inch and a half long, rather more than half an inch in diameter at the larger, and a quarter of an inch at the smaller end. It did not look in the least like a human tooth.

I dropped my rupee through the slats of the contribution-box, and we retired, with difficulty making our way through the throng of brown-skinned, inadequately dressed natives, who were now pouring in.—*Chicago Tribune*.

JOINT MEETING.

The New Jersey and the Pennsylvania State Dental Societies will meet at Asbury, Park, July 16 and 17, 1891.

HAYDEN DENTAL SOCIETY OF CHICAGO.

The third annual meeting of the Hayden Dental Society was held Monday, evening, April 20, 1891. Dr. A. J. Oakey read a paper entitled "The Fifth Pair of Nerves." The discussion was opened by Dr. J. W. Wassall.

The annual election of officers resulted as follows; President, A. J. Oakey; Vice-President, J. L. Ubellar; Secretary, J. O. Brown; Treasurer, W. H. Cowen, Jr. Executive Committee: Louis Ottofy, (to April, 1894), Dr. Messenger, (to April, 1893), A. W. Freeman, (to April, 1892).

TENNESSEE DENTAL ASSOCIATION meets at Murfreesboro, July 7-10, 1891.

WISCONSIN STATE DENTAL SOCIETY. The next annual meeting will be held at Eau Claire, July 21st to 24th, inclusive, 1891.

VERMONT STATE DENTAL ASSOCIATION: At the fifteenth annual meeting held March 17-20, 1891, the following officers were elected: President, W. S. Curtis; Vice-Presidents, G. F. Cheney and A. J. Parker; Treasurer, W. H. Numsell. Burlington, Vt., will be the place of next meeting, the third Wednesday in March, 1892.

MISSISSIPPI VALLEY ASSOCIATION OF DENTAL SURGEONS—OFFICERS FOR 1891-2.

President, L. E. Custer, Dayton; first vice-president, O. N. Heise, Cincinnati; second vice-president, J. Dillon, Bellefontaine; corresponding secretary, H. C. Matlack, Covington; recording secretary, H. T. Smith, Cincinnati; Treasurer, F. A. Hunter, Cincinnati. Next place of meeting, Cincinnati, Ohio.

ANTISEPTIC TOOTH POWDER (Vigier).

Resorcin, by weight,	-	-	-	-	-	-	-	20 parts.
Salol, " "	-	-	-	-	-	-	-	40 "
Powdered orris root, by weight.	-	-	-	-	-	-	-	80 "
Powdered chalk, " "	-	-	-	-	-	-	-	400 "
Carmin No. 40, " "	-	-	-	-	-	-	-	3 "
Oil Peppermint,	-	-	-	-	-	-	-	Sufficient to perfume.

Gazette Hebdom De medicine et de Chirurgie, 1890.

INSANE ASYLUMS AS SUITABLE INSTITUTIONS TO PRACTICE THE EXTRACTION OF TEETH.

KALAMAZOO, Mich., April 24.—The legislative investigation into the asylum management was resumed to-day. Dr. Edwards admitted that a patient named Cable had been deprived of his lower front teeth. In one of his violent moods he bit a piece of flesh from attendant Haight's arm. It was necessary for the safety of the attendants to either pull his teeth or tie his hands. Cable's mental condition has improved, and the extraction of his teeth was more humane than putting him under restraint or permitting attendants to use violent means."

WHAT SHOULD BE DONE FOR A COLD IN THE HEAD.

It may not be always possible to break up a cold. Sometimes during the congestive stage anything which will allay irritation is sufficient. The person who feels a cold coming on should instantly betake himself to bed, drink a cup of hot ginger tea, and make use of a snuff like that which was proposed several years ago by Dr. Ferrier.

Rx

Morph. sulph.	-	-	-	-	-	-	-	gr. i.
Bismuth subnit.	-	-	-	-	-	-	-	3 iii.
Pulv. acaciæ	-	-	-	-	-	-	-	3 i.
M.								

The insufflation of a little morphine at the commencement of a cold in the head is sometimes attended with very happy results.—*The Journal of the American Medical Association.*

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The eighth annual meeting of the National Association of Dental Faculties will be held at Saratoga Springs, New York, on Saturday, Aug. 1st, 1891, at 10 o'clock A. M.

Applications for membership must be in the hands of the Executive Committee, Dr. J. Taft, Chairman, sixty days prior to the meeting.

Each delegate must be a member of the teaching faculty in the College he represents, and bring a certificate signed by the President (or Dean) and Secretary of his College, stating that he is authorized to act for them.

Delegates must be in attendance promptly at 10 A. M. on the day of meeting, in order that all the business may be concluded before the meeting of the American Dental Association, Aug. 4th.

J. D. PATTERSON, Secretary,
Keith & Perry Bldg., Kansas City, Mo.

CHARACTER IN THE TEETH.

The shape and placing of the teeth are not without significance in the character given by the mouth. When the upper gum shows above the teeth directly the lips are opened, it is a sign of a cold and phlegmatic nature. Short, small teeth are held by the physiognomists to denote weakness and short life, while rather long teeth, if evenly set in the head, denote long life. The more the teeth, in point, size, shape, and arrangement, approach to those of carnivorous animals, the more violent are the animal instincts in the person; while the more human teeth in shape and position approach to those of graminivorous animals the more placid is the character. White, medium-sized, evenly set teeth, which are seen as soon as the mouth is open, but which are entirely exposed—that is, which do not at any time show the gums—are a sign of good and honest natures. Projecting teeth show rapacity; small, retreating teeth, which are rarely seen except in laughter, show weakness and want of physical and moral courage. The lower teeth projecting and closing over the upper range are indicative of a harsh nature. —*Manchester Guardian*.

PLANS FOR WORLD'S CONGRESSES.

President Bonney of the auxiliary has prepared a classification suggesting the months in which certain congresses should meet. He does this, he says, in order to avoid confusion, and this is his classification:

May—Music, literature, and art, including congresses of authors, publishers, philologists, librarians, composers, singers, dramatists, painters, sculptors, and the like. Also medicine, including public health, private sanitation, governmental regulations, prison reform, and the like.

June—Religion, morals, and temperance, including church congresses, missionary conventions, Sunday-schools, social purity, ethics, morals, suppression of vice, etc.

July—Science, philosophy, invention, and education, including congresses of teachers, superintendents of schools, astronomers, archæologists, botanists, chemists, electricians, ethnologists, geologists, geographers, mineralogists, metallurgists, zoologists, etc.

August—Law and government, including municipal, general, and international law, the administration of justice, the government of cities, expatriation, naturalization, and extradition, international privileges of citizenship, patents and copyrights, arbitration and peace.

September—Labor congresses, social science associations, building associations, mutual benefit associations, coöperative organizations, trades and occupations, etc.

October—Agriculture, commerce and finance, including agricultural colleges, State board of agriculture, farmers' societies, such as dairymen, horse, sheep, and cattle raisers, horticulturists, pomologists, and kindred organizations; boards of trade, bankers' associations, and other organizations relative to production, transportation, distribution, and exchange.

AMERICAN DENTAL ASSOCIATION.

We have received the following circular-letter from the Chairman of the Executive Committee of the American Dental Association :

CHICAGO, May 15, 1891.

DEAR DOCTOR: A resolution was adopted at the last meeting of the American Dental Association, authorizing the Executive Committee to communicate with members of dental societies and with the dental profession of the country, to the end that the membership of the various local and State societies may be increased; that the usefulness of the American Dental Association may be advanced, and the relations between it and the local societies be made more intimate. One object is to awaken a lively interest in the meetings of the American Dental Association, and to secure further representation from the various local societies at the annual general meetings. Will you be kind enough to show your pride in your local society by interesting yourself personally in this matter, and secure the appointment of delegates to the next meeting of the A. D. A., to be held at Saratoga Springs, N. Y., August 4, 1891? In addition to the appointment of delegates we would suggest that your society appoint a committee who will forward to the chairman of each section such matters of interest as have transpired in your society during the year. The facts need only be given to the Chairman or Secretary in such shape as to enable them to include them in the general report of each section. The names and addresses of the officers of the sections are herewith appended. If the societies of which you are a member have already met, will you send the paper you have read, or an abstract of it, or a brief outline of what you said in the course of discussions, or a short report of the entire meeting to some one of the chairmen or secretaries below named?

We desire a full attendance at the next meeting, as matters of great importance will come before it. The best railway and hotel rates will be secured, and all who visit Saratoga will, we hope, be well repaid for the time and money spent in visiting that famous resort.

J. N. CROUSE,

Chairman Executive Committee.

American Dental Association: President, A. W. Harlan, 70 Dearborn street, Chicago. Secretary, George H. Cushing, 96 State street, Chicago.

Sections: I. Prosthetic Dentistry and Metallurgy. Chairman, T. S. Waters, Baltimore, Md.; Secretary, W. B. Ames, 70 State street, Chicago.

II. Dental Education, Literature and Nomenclature. Chairman, C. R. E. Koch, 3011 Indiana avenue, Chicago; Secretary, Louis Ottofy, 70 Dearborn street, Chicago.

III. Operative Dentistry. Chairman, A. E. Baldwin, 828 West Adams street, Chicago; Secretary, N. S. Hoff, Ann Arbor, Mich.

IV. Histology and Microscopy. Chairman, W. X. Sudduth, Minneapolis, Minn.; Secretary, I. P. Wilson, Burlington, Iowa.

V. Materia Medica and Therapeutics. Chairman, A. W. Harlan; Secretary, James Truman, 3243 Chestnut street, Philadelphia.

VI. Physiology and Etiology. Chairman, H. A. Smith, 128 Garfield Place, Cincinnati; Secretary, W. S. How, 12th and Chestnut street, Philadelphia, Pa.

VII. Anatomy, Pathology and Surgery. Chairman, T. W. Brophy, 96 State street, Chicago; Secretary, M. L. Rhein, 104 East 58th street, New York.

A DENTAL COMPARISON. THE DIFFERENCE BETWEEN PRACTICING DENTISTRY IN PARIS AND MINNEAPOLIS. INTERESTING POINTS NOTED BY DR. J. H. SPAULDING WHO HAS TRIED BOTH ENDS OF THE LINE.

Dr. J. H. Spaulding, a former Minneapolis dentist who has been practicing in Paris for the past five or six years, is in the city, the guest of his brother, Dr. W. A. Spaulding. In his practice among the better classes of the French people, he has had an opportunity to compare France and America from a dentist's standpoint, and he makes some interesting observations on the characteristics of the two nations. He finds a striking difference in the way in which the dentists is regarded by his patient. In France the patient places himself more under the care of the dentist; he goes to him to save his teeth, and is anxious to have him take whatever course he thinks best. Americans, on the other hand, are apt to be dictatorial, and are often given to grumbling and finding fault with the dentist's decision. The Frenchman has a greater respect for authority and professional skill.

On one point, however, the men and women of France are firm. They will not have their front teeth filled with gold. They object to wearing conspicuous jewelry in their teeth, and insist on having none but white filling where it will show. The gold filling in the teeth of Americans is a source of no little amusement to them. They suppose that it is a fad among Americans to have the brightest gold possible in their front teeth; and some of them actually believe that American women have their teeth set with diamonds.

The Frenchman's preference for amalgam and cement fillings is entirely irrespective of the cost of the materials. The French dentist charges for his services without regard to the material used. The minimum fee is the same for gold, cement and amalgam fillings, and in long operations the charge is regulated entirely by the time required.

A feature of the practice in France which is very agreeable to the dentist is the manner in which the patient pays his fee. The Frenchman, when he settles with his dentist, thanks him for his kindness, attention and delicate manner of operating. An American is apt to think he has done all that can possibly be expected of him when he has drawn a check for the amount of the bill. He regards the affair as a commercial transaction which consists largely in buying so much amalgam or gold, and overlooks the intimate personal relation between

himself and his dentist. In France the manifestation of kindly feeling between dentist and patient extends to the exchange of invitations and other social civilities; and this, too, in a country where it is difficult to gain entrance to good society. The Frenchman is loyal to his dentist professionally and in case of removal will patronize his successor, or some one whom he recommends.

Although there are a few lady dentists in France, and more in Russia and Germany, the young lady assistant so common with American dentists is rarely found. Dr. Spaulding has one in his office, and some of his patients have expressed themselves pleased with the innovation, but others object to having a third person around. The patients sometime insist that no one shall see them at the office. Europeans in general, and especially among the less favored classes, neglect their teeth much more than Americans do.

The French dentists have a high opinion of the skill and inventive ability of their American brethren, although they consider them a little pretentious and showy in some of their methods. In the manufacture of plates the French dentist excels the American, as that branch of the profession is developed into a specialty, and not left to apprentices and students as in America.

"There is no other profession on the face of the earth," says Dr. Spaulding, "in which the productive years are so short as in dentistry, or the demand on the vital forces so severe and exhausting. The physician is in demand when he is 50, but if the dentist's hand shakes a little, or if people imagine that he can't see as well as he once did, he is done for. When he is ripe in experience he is about ready to break down. People who grumble at their dentist's fees should remember that they are paying for ten or fifteen years of a man's life"—*Daily Paper*.

List of officers of Iowa State Dental Society: President, Dr. S. C. Hatch; Vice-President, Dr. L. E. Rogers; Secretary, Dr. G. W. Miller; Treasurer, Dr. W. G. Clark. Next place of meeting, Ottumwa.

DENTAL DEGREES CHEAP.

A member of the State Board of Dental Examiners, to which the communication given below was referred, stated to a *Democrat* reporter yesterday that about 1881 there were filed in the Secretary of State's office under the general laws of incorporation, articles of association of a Wisconsin dental college, by three men living in Delavan, this State.

Immediately these men addressed nearly every dentist in the United States with circulars offering to furnish him post-paid, a diploma of Doctor of Dental Surgery on the receipt of \$12. The State Dental Society at once passed resolutions of condemnation. These men actually established a school at Delavan which they conducted for about two years. The leader and the school died together. Our State dental law was passed soon after and the Board of Examiners declared the entire institution disreputable, and refused to accept its diplomas. The National Dental Society confirmed its action and never has one of the diplomas been accepted or recognized in the United States.

As appears from the communication given below, immense frauds have been practiced on unsophisticated foreigners. The following is the letter:

12 DALSTON LANE, LONDON, N. E., Jan. 15, 1891.

To the Honorable, the Secretary of the State of Wisconsin :

HONORED SIR.—We beg to inquire of you whether the Wisconsin Dental College in the city of Delavan, is an existing dental college or a humbug. It probably exists on paper only, because no existing college will be guilty of such dishonorable acts as to sell diplomas of Doctor of Dental Surgery like sandwiches, as the Wisconsin Dental College does. The proprietor of a probably extinct charter, Mr. Devendorf, in Delavan, has sent two agents to Europe, who sell diplomas of the Wisconsin Dental College for \$12 apiece. The diplomas are sold here to barbers, car drivers, chimney sweeps and to everybody who is in possession of \$12. Taken by the dozen, they are sold at the price of \$100 a dozen. The writer of this has bought from the Wisconsin Dental College for his dog a diploma as American Doctor of Dental Surgery.

The name of the London agent of Mr. Devendorf is Mr. Walden. The name of the Berlin agent is Mr. Olschowsky; his address is, Goben Strasse No. 19, Berlin, Germany.

Mr. Olschowsky has sold 1,240 diplomas for Mr. Devendorf, of Delavan. Mr. Devendorf claims to have found the old (probably repealed) charter of the late diploma dealer, Mr. Morrison, in Delavan, and to have reorganized a dental college, but the existing dental colleges in the United States, state that this is an infernal lie and that no lectures are held. They report that the whole thing is a diabolic swindle, a dishonor and disgrace to the State of Wisconsin.

The following persons who have never been in America and never listen to a single dental lecture in the Wisconsin dental college, have bought diplomas as American doctors of dental surgery from Mr. Devendorf in Delavan, and by his agent, Mr. Olschowsky, in Berlin:

Mr. Grunbaum, Berlin, Friedrich strasse 47,
 Mr. Kirstein, Berlin; Koniggratzer strasse 125.
 Mr. Poser, Berlin Kraser strasse 5.
 Mr. Loewe, Prinzenstr 76, Berlin.
 Mr. Ohlendorff, Koniggratzer strasse 39, Berlin.
 Mr. Schroeder, Unterden Linden, 19, Berlin.
 Mr. Sierks, Rudersdorfer, strasse 31, Berlin.
 Mr. Starke, Friedrich strasse 13, Berlin.
 Mr. Winter. Koch strasse 19, Berlin.
 Mr. Mangelsdorff, Friedrich strasse 135, Berlin.
 Mr. Haas. in Frankfort o' Main, Germany.

A long list containing the names of other purchasers of the diploma of D. D. S. from the Wisconsin dental college is to follow.

We, the European society for the prevention of American humbug and swindle in Europe, beg of you to stop this swindle, as this fraudulent sale of American diplomas as doctors of dental surgery has lowered the honor and the standard of American dental surgeons to such an extent in Europe, that the words "American dental surgery" or "American doctor" excite laughter everywhere in Europe and all over Europe. American doctors are contemptible, degraded and prosecuted, because everybody can become an American doctor for \$12, without listening to a single lecture and without traveling to America.

We beg of you to kindly inform us whether the Wisconsin Dental College in

Delavan, whose proprietor is Mr. Devendorf, holds a license to sell diplomas of doctor of dental surgery and whether such boughten diplomas entitle in your state to the title of doctor of dental surgery.

We would be much obliged to you for your kind information. Kindly send your reply to our secretary.

MR. H. J. GEORGES,

12 Dalston Lane, London, N. E., England.

The state board of dental examiners will take such immediate measures as will clear the fame of our state from such frauds as have been practiced by this gang of swindlers.—*Madison (Wis.) Democrat.*

A MUNIFICENT GIFT.

The Missouri Historical Society, of St. Louis, is about to come into possession, through Dr. J. J. R. Patrick, of this city, one of the finest and most complete archæological collections to be found in the West; a collection which has taken many years to complete at a cost of many thousands of dollars in money, to say nothing of the valuable time spent by Dr. Patrick in searching for specimens. The *St. Louis Globe-Democrat* of Wednesday morning has the following concerning this collection and its transfer to the Missouri Historical Society:

In 1868, Dr. J. J. R. Patrick, of Belleville, set before him to form a scientific collection of the archæology of St. Clair County, Ill., and pursued the object with unwearied perseverance until last year, spending many thousand dollars and time as valuable as money to accomplish his purpose. He got together some 6,000 specimens, and as long ago as the Philadelphia Centennial, was the reputed possessor of the best local cabinet in the country. Besides, he caused to be surveyed topographically the American Bottom, and accurately noted on the plats which embodied the results of the survey the position of every aboriginal earth-work, its shape and dimensions, at an expense of some \$2,000.

In consequence of a recent domestic affliction Dr. Patrick concluded to transfer his work into other hands. Efforts were made to secure the cabinet for St. Louis, but without success. Meanwhile advantageous private offers were made and refused, the owner being unwilling that that on which so much had been expended and to which he was attached, should go anywhere except to an established institution which already had a museum. J. G. Chapman being informed of these facts, after satisfying himself of the real merits of the Patrick collection, thought that by all means it should come to this city, and accordingly he and Col. George E. Leighton lost no time in carrying this conclusion into effect. The Patrick cabinet will be added to the archæological department of the Missouri Historical Society, already very large, and if others but supplement the liberality of the gentlemen mentioned, with what is necessary to procure the additional cases needed, St. Louis will soon have the most important archæological museum at least in the West. This is the most important addition by far, made to the archæological department of the society since it was begun, seventeen years ago and is of large value both pecuniarily and scientifically. Much time will elapse before it can be got in order for the cases.—*Belleville Advocate.*

OBITUARY.

Dr. E. Maynard died May 4.

Dr. Milton F. Hand, of Joliet, Ill., died in a Sanitarium, near Pittsburgh, Pa., April 19, 1891.

Dr. Hand was born in Oneida County, N. Y., May 5, 1834. Early in the fifties he became a student of dentistry with Dr. W. W. Allport, of Chicago. He afterwards practiced his profession with the late Dr. E. R. E. Carpenter in Joliet, Ill., which was his home for the last thirty years of his life. He served during the war in Company H 100th Ill. Infantry. He was for many years a member of the Illinois State Dental Society and was seldom absent from its meetings when able to attend.

ELECTUS B. WARD, M. D., D. D. S.

Dr. Electus B. Ward was born on Governor's Island, New York Harbor, on December 25th, 1856. His grandfather, Colonel Electus Backus, U. S. A., in whose honor he was named, was then officer in charge of Governor's Island, and Captain James N. Ward, U. S. A., the father, was aide to the commanding officer. Dr. Ward was reared and received his preliminary education in Detroit Mich. He was a pupil and graduated from the Patterson Grammar School. He then became a pupil of Professor Isaac M. Wellington, civil engineer, of Detroit, under whom he took a thorough course in civil engineering. In 1873 after completing his studies under Professor Wellington, he went to Europe where he passed a year in perfecting his professional education. On returning to America he decided to adopt the profession of medicine, and accordingly entered the Long Island Medical College, Brooklyn, N. Y., where he took a four years' course of study; graduating in 1878. He was then appointed assistant to the chair of medicine at Long Island Medical College and held that in connection with his practice for two years. Dr. Ward was married December 26th, 1876, at Detroit, Mich., to Miss Mary Louise Armor, daughter of Professor Samuel G. Armor, L. L. D., Dean of the Long Island Medical College.

Dr. Ward graduated from the Chicago College of Dental Surgery receiving the degree of D. D. S. in 1889. He also held the chair of Adjunct Professor of Pathology in the same school for two years.

Dr. Ward died on the evening of April 25, 1891, after a long and painful illness, at his beautiful country home, two miles from Richmond, Va., on the James River. He leaves a wife and two sons, H. Armor Ward, and Welker Holcomb Ward.

RESOLUTIONS OF RESPECT TO THE MEMORY OF W. H. ATKINSON, M. D., D. D. S.

WHEREAS, The Chicago Dental Society having learned of the death of Dr. William H. Atkinson, of New York, one of the most eminent, learned and best-known members of the dental profession; therefore,

Be it Resolved, That in the death of Dr. Atkinson, the members of this society feel a sense of personal bereavement in the loss of a much-loved and conspicuously useful member of the profession, and while we bow in humble submission to the divine will, we desire to express our sorrow at his final exit to the unknown land beyond this vale of tears.

Be it Further Resolved, That the secretary transmit to the bereaved family of Dr. Atkinson a copy of these resolutions, and that a copy be furnished the dental journals for publication.

J. N. CROUSE,

A. W. HARLAN,

W. W. ALLPORT, *Committee.*

When the above resolutions had been read Dr. Harlan said that for more than twenty years he had known Dr. Atkinson as a personal friend; while he

thought him erratic in many things, he had always found in him a good example to follow. He believed that Atkinson's influence on the progress of dentistry was greater than that of any American living or dead; and his life's work had been of such value to every dentist that his place could not be filled by any one now in our ranks.

DR. CROUSE said although Dr. Atkinson was erratic, he was a wonderful professional man. He knew of no practitioner in America capable of taking his place. He was a man of great and varied information.

DR. ALLPORT said, I do not wish to take up the time of this society, but I cannot allow the occasion to pass without adding a word of tribute to the memory of the subject of the preamble and resolutions just read.

It is now some thirty-six years since I first made the acquaintance of Dr. Atkinson. For most of the time since our acquaintance to the time of his death, there have existed between us the most friendly relations. During this time I have felt that there was no one in the profession to whom I could go and so safely rely for explanations or expositions of questions that I did not understand, as to him, and I never conferred with him in regard to such matters without feeling that I was greatly benefited and I feel that his death will be to me a personal loss.

It has been said here this evening that Dr. Atkinson was eccentric and peculiar. In some respects the remark is true; he was certainly peculiar in his unusual desire to impart information to his fellow-practitioners as well as to enthruse them with a desire to elevate the practice of dentistry by improving themselves and in producing the best possible results in whatever they themselves might do. The good he has done in this direction has been far reaching and will be more fully appreciated now that he is dead than while he was living. His well-stored mind was ever open to those who sought knowledge of him and because of his ever outstretched and open hand to the needy—he died poor in this world's goods, but rich in the esteem and affection of his profession. Dr. Atkinson had a very large and kind heart. During all the time I have known him I seldom heard him speak unkindly of any one, and when he did it was half apologetically, his kind heart seeming to reprove him for what his tongue had said, even of well-known faults.

On the other side of the water there may be dentists his equals in scientific knowledge but in this country there is no one who can fully take his place.

In the death of Dr. Atkinson I feel that I have lost a personal friend, dentistry its brightest light and dentists their greatest teacher.

Dr. Ottofy said he had the pleasure of meeting him a short time ago, and it was remarkable the friendly interest he took in young men. Being a man of such extensive knowledge, he felt reluctant in approaching him. He felt that the profession had lost a great and useful man.

Dr. Woolley said he was a beacon light to many members of the profession. He was an inspirer and stimulator. He had heard him speak in societies, and every one was struck with the force, great knowledge and goodness of the man.

Dr. Holmes' last remembrance of him was while sitting near an open door one pleasant afternoon. He was impressed with his hospitality and kindness, and kind-heartedness, and on reading the announcement of his death in the *Dental Cosmos*, he felt the profession had lost one of its brightest lights.

THE DENTAL REVIEW.

VOL. V.

CHICAGO, JUNE 15, 1891.

No. 6.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY.

REPORT OF THE COMMITTEE ON DENTAL ART AND INVENTION.

Read by W. B. AMES, D. D. S., CHAIRMAN, CHICAGO.

Your committee considers that it is within their province and more beneficial to the Society to report upon the proven value of what has been offered in the few years just past, than if the report consists merely of a synopsis of what has been offered of a novel nature within the past year, since the year past has not been especially fruitful in inventions pertaining to dental science.

Many individual dentists and several of the manufacturers have been devoting their ingenuity to the application of the electric motor to the needs of the operating room and laboratory, without, in our opinion, producing anything near the ideal outfit, but we hope that by the time another year's progress is recounted there will be something offered in this line that will meet with universal favor.

Of the numerous materials and processes that are at present passing through the developmental stage we will refer first to the aluminum alloy and method of casting introduced by Dr. C. C. Carroll, as this in point of time has been as extensively and as thoroughly tested as anything we have to comment upon. Of this we can say unqualifiedly that it has been a disappointment. It has been the experience of all with whom we have been able to confer, that this composition in connection with vulcanite or celluloid will in the mouth, produce a salt, that, forming between the attaching material and the plate, severs the connection, rendering the piece worthless. Inasmuch as this has been complained of for a considerable time and the inventor has not offered a satisfactory remedy, we conclude that it is not in the nature of the alloy to behave differently under the conditions, and as we have known that with swaged plates of aluminum, the same phenomenon has been observed, we believe

that the alloy in the one case and the impurities in the other are to be held accountable and that the only practical manner of employing aluminum in prosthetic dentistry is in the form of swaged plates of absolutely pure material.

On account of the difficulty of soldering aluminum and the same percentage of cases where a full denture can be swaged without cutting and lapping, the Chase method or its equivalent, of constructing combination plates becomes valuable. By such a method an aluminum plate can be made up with vulcanite or celluloid to any case however prominent the ridge or tuberosities. We do not recognize anything markedly new or original in the Chase method, but in justice to the parties claiming a proprietorship in the method we must say that they have systematized a method of producing these combination plates, gold or other metal, more easily and expeditiously than any that has been taught heretofore, to our knowledge.

The Ward Electro-deposit Plate, a very prepossessing article, has now been before us long enough to arrive at some conclusion from practical observation as to its value as a substitute for swaged plates. The plates are prepossessing from their beauty in the newly finished state, from the possibility of easily obtaining an absolutely accurate fit, and the economy of material and labor as compared with a swaged gold plate. Those who had ever tried the protection of silver and the baser metals against the action of the fluids of the mouth by an electro-plate of gold were very skeptical in their estimation of the future of this plate and from the majority of the reports obtained, those who have refrained from employing the plates in their practice have met with less embarrassment than those who have employed them extensively. While those who have employed them invariably report very satisfactory and pleasing adaptations; the almost universal complaint is that the gold surface does not retain its original color and appearance; that in a longer or shorter time it takes on a cloudy, dirty appearance, becoming, in some cases in a very short time, unrecognizable as the original article. In some cases the plates do not stand the test of vulcanizing upon them, the enclosed silver sulphuretted in the process.

One gentleman writes that it is very embarrassing to put into the mouth a gold plate and have it return in a few weeks looking like pot metal. Naturally the manufacturers of these plates have

met with difficulties in perfecting their process and as they have informed us, from the dishonesty of employees.

We are satisfied that if it is possible to satisfactorily protect silver against the action of the fluids of the mouth by an electro-deposit of gold, the depositing of the metal must be done in a very careful and conscientious manner, and that the work must be in charge of an expert skilled in obtaining uniformly the special deposit best suited to this class of work, and not taken up here and there by some dentist or electro-plater possessing very crude knowledge of the requirements in the case.

The electro-plate of gold being in a thoroughly crystalline state is at best a porous material as compared to fused and rolled gold. The crystals can be of a variety yielding a porous plate that would need a great deal of burnishing to render it impervious or it can be comparatively dense, but would need to be extensively burnished in any case and it is doubtful if in some classes of work the plates would stand the vigorous burnishing that should be given them.

We trust that the manufacturers will soon be able to supply these plates of a more uniform and satisfactory texture as there ought to be an extensive field for this class of work if it can be made so as to be relied upon.

Among the improvements in laboratory apparatus we can safely mention the Parker furnace for porcelain work. Although we do not feel competent to pass judgment upon it as a satisfactory means of baking continuous gum dentures, it certainly demonstrates the fact that this work can be successfully made in the naked flame if the proper combustion of the gases is arranged, for we believe that this furnace with a proper gas and air supply will do the work that it is recommended for and will make the use of continuous gum sections and dentures more general. The Hoskins furnace and Automatic Hydrocarbon blowpipe as constructed for assayers' use but applicable to continuous gum work has not, we deem, received the notice that it merits. It is no more cumbersome than the gas furnaces, the proper heat can be quickly and easily obtained and there is absolutely no danger of gassing if the combustion is properly attended to.

One of the popular fads of the day seems to be the making of inlays of fused gold to a form of the cavity in some way obtained. This process is exciting considerable interest and becomes very

popular with all who have given it a fair trial. While it appears to supply the want in a certain class of cases, it is hard to define what is really the limit of its application and usefulness as new applications are continually presenting to those who are making considerable use of the method. It seems to be of much more promise than the inlays of fused porcelain used by some enthusiasts rather extensively, there being fewer chances of error and greater possibilities of exactness in the construction and greater natural strength when in position.

It may be premature to judge as to the value of the method but we feel that if these fillings are made with the same accuracy that should be embodied in any high class operation, and a good element used in the attachment, there is no necessity for alarm.

In the way of novel apparatus we have offered a labial clamp by Dr. J. E. Keefe; an engine arm spring by Dr. G. J. Dennis; a rubber dam weight and holder by Dr. John G. Harper, of St. Louis, and a set of plug trimmers by Dr. G. V. Black. Also a novel removable bridge by Dr. A. E. Matteson.

DISCUSSION.

DR. W. A. STEVENS said regarding the Teurk motor, some might get along first rate with it, while others would not. He told the party who represented it that he could put it into his office on trial and at his own expense if he desired, and if it proved satisfactory as recommended, he would pay for it, if not, he should take it out with no complaints; I judge he did not have confidence in the motor, for he failed to come and put it up.

DR. T. L. GILMER: I want to say a word with regard to electricity for the purpose of operating the dental engine. I have had six years' experience with the use of the water motor, and it certainly answers a very good purpose where there is a sufficient water pressure at all times. Since I have been practicing in Chicago where the water pressure is not always sufficient, I have investigated electricity somewhat, and find it more satisfactory than water. With it there are no valves to leak, perhaps there may be less trouble of this kind with the Teurk motor, but with the Backus motor I had leaks that caused me considerable annoyance. Then there is the danger of the freezing of the water in the pipes. The method I

employ in the manufacture of electricity can be used anywhere, therefore its use is not confined to large cities only, where there is a day current. I use a storage battery such as I showed you last year. The storage battery may be sent out to be charged by the dynamo, or it may be charged by primary cells, but I will not say very much more about that for fear of trespassing upon the report of the Committee on Dental Science and Literature. Regarding the electric motor, think there is no make, speaking from my experience (and I have examined a number) better adapted to the dentists' use than the $\frac{1}{8}$ horse power motor made by the C. & C. Co. It is certainly well adapted to our use, especially their reversible motor. Frequently it is desirable to reverse the direction of the rotation of a tool, this may be done with this and other makes of electric motors, but cannot be done with the water motor. My motor sets on my operating case in easy reach and when I desire to change the direction of rotation I simply throw the lever over from the one side to the other. This changes the brushes and alternates the current reversing the direction of rotation. Do not think Dr. Ames used the Suspension Engine sufficiently long to fully appreciate all its good qualities or he would not have given it up. It seems to me we wish to apply the power as directly as possible to the bur. In using large discs or corundum points, or even large burs, with the flexible cable engines, where they are applied with some force, the tool appears to be rotating in both directions, indicating a good deal of back lash. This is something we wish to get rid of, and it cannot be gotten rid of if we use the flexible cable. I have used the suspension engine for a good many years and do not think I could be persuaded to change to any other, unless constructed on the same principle: however, it needs some improvements in the pullies and cord attachments.

DR. A. W. HARLAN: I would like to ask Dr. Gilmer a question with reference to the relative cost of using a storage battery as compared with the street current in cities?

DR. GILMER: The cost for dentist's use for the street current is \$3.00 per month. The price of sulphate of copper varies, when it can be bought for 8c or 9c a pound, this with the zincs, which must be replaced in the primary batteries once every four or five months, make a total cost for a full practice of about the same. Regarding the life of a storage battery I cannot speak definitely. Of course a great deal depends upon the use it has. Some have been in use

for three or four years and are still in good condition. For light polishing, such as for crown and bridge work and for propelling the engine, two storage cells will be sufficient. There are a good many uses to which the electric current may be put other than running the motor.

DR. HARLAN: Will Dr. Gilmer kindly explain those uses?

DR. GILMER: I do not now see how I could well get along without a light for the mouth. Sometimes I wish to see into the roots of teeth in which I cannot easily reflect daylight. Late in the afternoon or on dark days an electric light may be very usefully employed. By reflecting the light from one of the small Edison lamps into the roots of teeth, in some cases I can see better than when daylight is used. I do not feel that I can treat a root so thoroughly without the aid of electricity as with it. Sometimes we find a cavity neglected in which there is a large fungous growth of gum which has nearly filled the cavity. This growth may be removed with certain kinds of excavators, but is much more easily removed by the galvanocautery. After its use there is no bleeding and the parts are left in a healthy condition.

Again, we find a wisdom tooth which has perhaps been periodically troubling the patient for several years in an endeavor to erupt, in which it has perhaps been only partially successful, there is a heavy layer of gum over the posterior surface. We have scissors and forceps made for the purpose of cutting away this gum, but with them at best it is a bloody and awkward operation. Bend the wire of the cautery so as to adapt it to the case, apply it, and turn on the current; it removes the gum quickly, besides it is antiseptically done.

DR. HARLAN: If Dr. Gilmer will state his views concerning the adaptability and uses of aluminum plates, of gold inlays and porcelain inlays, I will be much obliged to him.

DR. GILMER: Regarding the recent cast aluminum plate I do not know much, have not tried it, have been doubtful about it. Have had some experience with the swaged aluminum plates, which was not very satisfactory, therefore abandoned its use a good many years ago.

With regard to gold inlays and porcelain inlays, have had a little experience with each. The porcelain inlays which I have made have been adapted by grinding. Have not used the furnace to manufacture them. Do not admire porcelain inlays on the anterior

surface of teeth, where it is necessary to build gold rings about them, do not think them ornamental. Believe it is better to depend upon cement to retain the inlay, telling the patient that it may be necessary to re-cement in time. Have had more experience with gold inlays and believe they have a place in dentistry. Believe we crown too many teeth. The crowning of teeth should be our last resort. We should exhaust every possible means in trying to save teeth before crowning them. Gold inlays come in very nicely in badly decayed teeth in which we do not wish to use amalgam. Dr. Ames is an expert in this direction, and knows a good deal more about it than I do. I formerly burnished gold to the cavity and then invested and melted in solder, but in the majority of cases it seems to me that it is better to take an impression of the cavity in the tooth and make a cast. I learned the following method from Dr. Ames: Take an impression and make a cast of copper amalgam and afterward burnish the gold to that, using No. 120, or platinum if you prefer, fill in with solder and then cement in place.

DR. T. W. PRITCHETT: What material makes a good dental plate?

DR. GILMER: Gold makes a good dental plate, rubber likewise, but it is not so good as gold. Celluloid makes a good dental plate. It goes without saying that continuous gum is a good plate.

DR. C. N. JOHNSON: It is not likely that we shall soon have a labial clamp which is universally applicable, but this little appliance of Dr. Keefe's, mentioned in the report, comes the nearest to it of any that I have seen. It is simple and easy of adjustment. The lips may be bent with round nose pliers to suit almost any cavity. In cases where it is desirable to have the labial lip much higher than the lingual, the clamp may be tilted in this way (illustrating) and a bit of wood slipped between the tooth near the cutting edge and the labial bow of the clamp. This will keep it tipped at the desired angle. When the clamp is in position the set screw may be tightened to any degree of gripping power. I have found it a very effective instrument.

A MEMBER: I have had some difficulty in making this clamp stay on.

DR. JOHNSON: You can tighten the screw down so that it cannot get away.

DR. G. V. I. BROWN: I am much interested in the subject of inlays, for I believe they have a place among our operations that can so well be filled by no other method under like conditions, but at present the field of their successful use is very limited, although worth the attention their importance warrants, and I feel sure improved forms will be suggested and their range of usefulness vastly widened. Hoping that such will be the result I am desirous of promoting a freer discussion among the members of the association.

My first inlay was put in eight years ago, and is still doing good service without having been touched during that time. I have been using them in many different forms ever since.

In order to avoid the discussion drifting into the usual channel of inlay versus gold filling, or gold crown, with which I have little sympathy, I have provided some drawings illustrating several forms of teeth, and cavities under such conditions as I have found the use of inlays to be successful, and quite outside the range of usefulness of either gold filling or crown.

Fig. 1 shows a central incisor from which the anterior proximal surface including the corner and part of the cutting edge has been lost by reason of decay, or some accidental cause.

Frequently we find an inlay advisable in such cases, perhaps for the sake of improved appearance, or because the remaining portion of the tooth crown may be insufficiently strong to securely hold a gold filling without fear of breaking away from it, and yet be too good to warrant cutting off for the purpose of crowning.

A piece of porcelain tooth is ground to fit the outline of the outer wall of enamel, and to supply the lost contour of the tooth in such manner as to leave the pins intact. A backing of gold or platinum is fitted therein, platinum rolled very thin is burnished to the form of the inside of the cavity, well over the cervical border and lingual wall of enamel, but carefully trimmed away from the labial wall so that it may not interfere with the perfect joining of the porcelain with the enamel on that surface. A platinum pin or post is pushed through the thin platinum lining into the pulp canal far enough to give secure anchorage, then the pieces are removed together without, if possible, disturbing their respective positions, and soldered with pure gold, which is also flowed lightly over the surface of the platinum lining enough to give a slight degree of additional stiffness, so that when the attached pin and

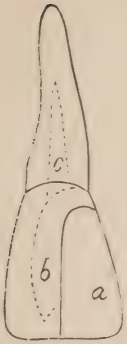


FIG. 1.



FIG. 2.



FIG. 3.

- a.* Porcelain Crown.
b. Outline inside cavity.
c. Outline of pin in position.

- a.* Inlay in position.
b. Anchorage fastening.



FIG. 4.



FIG. 5.



FIG. 6.

lining are again placed in position and burnished there will be less danger of changing form. Next the porcelain corner is placed in position and attached to the lining with a suitable cement, the pieces removed, and invested in such manner as to allow gold solder to be flowed into the hollow of the cavity lining and behind the backed porcelain corner, attaching the parts securely, and giving the contoured shape of the lingual surface.

When dressed down, polished and set in shape with gutta-percha, we have an operation that is sightly and strong, and one that will certainly commend itself for trial. The thin line of gutta-percha between the enamel and porcelain soon becomes sufficiently discolored to be but little if at all noticeable.

In such cavities as Fig. 2 illustrates, in the mouths of young people where it has been my custom to fill with cement for a period sufficiently long to bring about an improved condition of the mouth, I have found a simple form of inlay very useful, made by taking a very thin ribbon of pure gold (very thick foil I have generally used) between the thumb and fore-finger, sliding it up between the teeth, drawing tightly over the surface, and pressing the fingers sufficiently to mark the outline of the edge of the cavity. The gold may then be readily trimmed to the proper shape with scissors, following the line thus marked. Into the center of the concave inner surface of the piece thus formed solder is flowed to stiffen it, and also to fasten two little points for anchorage made by bending a narrow strip of gold plate, and soldering just at the bent portion, leaving the ends free to be adjusted easily when the piece is set in place. I use cement in fastening this class of inlay because the thin edge of gold can be burnished down quite closely as the cement sets, and usually the anchorage is insufficient for gutta-percha.

Fig. 3 represents a very familiar form of cavity, for which inlays may be made by grinding the porcelain piece and the cavity to fit each other, or by burnishing a thin piece of platinum to the shape of the cavity, as before described, filling it with porcelain body, and baking in a furnace, then removing the platinum and setting the porcelain filling thus made with cement usually, though occasionally gutta-percha may be used successfully.

Fig. 4 shows a section of a molar with the grinding surface abraded. It is frequently necessary to lengthen the bite or at least restore the lost portion of the crown of such a tooth. I have some

cases in my practice from which the idea is taken, where pyorrhœa had caused recession of the gums beyond the bifurcation of the roots, both in upper and lower molars. Perfect gold crowns were out of the question, or any method that required a perfectly fitting band, and solid gold tops fitted as shown with a button on the surface next the tooth for anchorage, have fulfilled every requirement successfully for years without change or dislodgment.

The top may be swaged and filled with solder or built up with wax upon a cast in the articulator from a bite taken with plaster to be perfectly accurate, and the form of the cusps and impressions cut in the wax to perfectly occlude with its antagonist in the mouth and a cast made of the wax top with which again an impression is made in marble dust and plaster, into which a button of gold is melted and pressed with a flat instrument, thus giving a solid gold cast which will accurately fit the position intended for it. To this may be soldered pins or a button as shown, or any other means of anchoring that will hold securely.

Fig. 5 is the form of inlay that I have used in compound cavities upon the proximal and masticating surfaces of molars and bicuspid. It is made from a piece of gold plate bent in such a manner as to allow one portion to form the proximal surface, and the other the masticating surface, the former being bent to make the surface convex, and thus giving the desired contour, the latter bent to give the concavity suitable to the occluding surface. In order to do this it is necessary to slit each edge a little at the corners of the angle formed by the bend, and after the shaping is done they are folded over and soldered. Inside the piece may be soldered a slip of bent plate as already described, or a pin to extend into the pulp cavity, if there be no live pulp to interfere. The edges are cut to fit the outline of the bowl of the cavity on a cast, or by actual trial in the mouth.

Cavities upon the buccal surfaces of molars and the labial surfaces of the anterior teeth, especially where they extend below the line of the gum margin, can be very satisfactorily managed as shown in Fig. 6, by trimming a piece of gold plate with beveled edges to fit as nearly as practicable to the outline of the cavity, soldering a little fastening of bent gold strip the same as in Fig. 2 upon the inner side, filling the cavity with gutta-percha and pressing the inlay into place. One gains all of the unquestioned advantage of gutta-percha over all other fillings in this position in the

mouth, and has it at the same time protected by a shield of gold that is cleanly and will absolutely prevent its being worn away.

In my experience where gutta-percha can be used to set them without danger of displacement (which of course greatly limits the general usefulness in the mouth) I have found inlays to be in almost every case more successful than any other kind of stopping, especially where recession of the gums makes the use of a crown band questionable. When I use cement the patient generally comes in quite pleased in the course of a few months, saying that the inlays in front teeth look much better than they did at first.

This I take as a danger signal, for I know that disintegration has begun, and the washing away of the cement line between tooth and porcelain has caused the improvement. In such cases I dry out the crevice at the line of junction with alcohol, then saturate a pledget of cotton with eucalyptol and wipe over it. Upon this I put a solution of chlora-percha, and over this rub warm gutta-percha until it is thoroughly worked into the joint. This leaves the cement inside protected from the secretions of the mouth by gutta-percha.

I have never seen a perfectly fitting inlay, and do not believe that a hard gold surface can be burnished against an edge of enamel closely enough to be impervious to the secretions of the mouth, as has been claimed can be done, even when protected by cement, for either there can be no cement in this joining, and of course it is defective, or there must be a thin line and however it must still be subject to the action of deleterious agents. Therefore all that can be claimed for inlays by any present method of making is a protection from wear for gutta-percha, or cement and gutta-percha, and the restoration of the contour with a hard, cleanly polished surface.

Absolute accuracy of fit cannot be claimed, but with gutta-percha underneath such perfection is not necessary.

DR. A. E. MATTESON: In the reading of the report this morning, the Parker furnace was mentioned. I have had some experience with it, but it has not been favorable with the use of Chicago gas. I returned it as a failure; it could not be used successfully with Chicago gas. Whether it can be used elsewhere with success I have not been able to ascertain.

In regards to porcelain inlays, I have experimented considerably with porcelain and with jewelers' enamel, and my experience

has been that neither one of these inlays has proved a success. If we could get the gum of the English teeth, we might obtain an inlay which would be equal to anything as a filling material. I have been unable to obtain any information in regard to the material after showing an English firm for what purpose I intended to use it. Where the filling has been knocked out, I have reset them with cement, and have seen them last for three or four years. I had one case where two-fifths of the crown was broken squarely off, with small proximal cavities on each side, which had been filled and worn for two or three years, and the child knocked it off with a croquet mallet. I have experienced a little with the other method and it is more trouble than to fill a tooth or to make a good inlay.

In regard to rubber and celluloid, I have not used the latter. Rubber I consider the best and cheapest of artificial bases. Nothing equals continuous gum, as has been said.

DR. J. W. WASSALL: I do not think enough has yet been said about inlays as a filling, and as this will be the only opportunity for discussing this operation I think more of the members ought to speak.

In my own practice I have found it a very valuable procedure. It is valuable to me in that it makes it possible for me to do better operations in certain cases than I could before do. It is valuable to patients in that they can get the benefits of these operations. There is less pain in connection with it as compared with other operations. I have found that teeth which I formerly cut down and crowned, can be satisfactorily restored in this way. Such cases would not stand the pressure necessary to condense a gold filling. I should like to hear the different methods brought forward by the different members who use it so as to get their ideas and knowledge of the subject. For instance the process of taking an impression and making a model of the cavity with copper amalgam in which to fit the inlay suggested by Dr. Ames. I have no adequate understanding of Dr. Swasey's method. It has been published but I have not as yet been able to get hold of the article. I have no doubt that Drs. Gilmer, Ames, Matteson and others have ideas on this subject, which should go on record. I do not think there is anything original in my way of making these inlays, except that for the last two or three months I have used eighteen carat gold solder entirely for fillings in the inlays. I make the matrix of the cavity by burnishing into it number 120 rolled gold

foil, furnished by R. S. Williams, or the S. S. White Company. Whenever I can do so, I put on a rubber dam. Then if the gold matrix tears a little bit in burnishing it into the cavity, you can apply another piece of rolled gold and it will if annealed stick on. Thin gold makes a better adaptation to the cavity wall than platinum. I am careful to leave a sharp margin on the outside of the enamel in order to mark distinctly the outline of the cavity. My reason for using eighteen carat solder is because you can hold the pure gold matrix over a spirit lamp and the eighteen carat solder will flow at once.

I melt eighteen carat solder over the bottom of the matrix, put it back in the cavity and burnish until I am sure I have a perfect fit—until I can take it out without altering the shape. Then invest it and fill up with solder to the required fullness. The cases in which I have had the greatest satisfaction have been in large cavities of bicuspid, lower molars, and on the buccal surfaces of teeth where they extend beyond the margin of the gum. These are the places that you do not fill satisfactorily in the old way. I have had no experience in making inlays in front teeth.

DR. HARLAN: I would like to say a word with reference to the use of porcelain rods for filling labial and buccal cavities. Some of you may not know that these are cemented into mandrels and after the cavity has been prepared, cleaned and made as nearly round as possible, the end of the rod is passed directly into the cavity, which has previously been partially filled with moistened diamond dust, and the rod is ground to fit the cavity; then after it is sufficiently well ground so that it fills the cavity entirely, it is cut off and cemented into the cavity, and the end of it ground and polished, leaving it flushed with the edge of the labial surface of the tooth. This may be cemented by Canada balsam. It may be put in with oxysulphate of zinc, or with any transparent resinous substance that is not affected by water. In a few cases, not strictly speaking inlays, I have treated bicuspid teeth as is shown on the board. Supposing the labial surface or cusp of a bicuspid is broken down to the gum, or the palatal or labial cusp is left standing, you do not wish to cut that down. The tooth necessarily being pulpless. I have taken a cuspid tooth and backed it with platinum and turned the platinum up, as shown by this line, soldering a couple of pins there, and fitting the porcelain at the margin of the gum so that it will extend beneath it a little; then a gold band is brought around

the inner cusp, soldered on either side, and this is driven down by previously heating the pins if necessary in gutta-percha or oxysulphate of zinc, then the exposed end may be covered with some one of the amalgams if it is not deemed advisable to cover it over with gold. If the case is a suitable one a flange of gold may extend over and to the inner cutting edge of the tooth, and the whole of it may be filled anteriorly with oxyphosphate or oxysulphate of zinc, and it makes a very secure operation. I have done that where the labial surface of the bicuspid and also the lingual was in position and in some cases they have been standing four and five years, and the result has been very satisfactory.

DR. WASSALL: I think the Society will be instructed if Dr. Ames will come forward and describe his process in detail of making inlays.

DR. W. B. AMES: I find since I have been engaged in this line of work that there is such a variety of method in making inlays, and the classes of cases are so complicated, it is a difficult matter to talk about. I can only speak of typical cases.

The copper amalgam dies are most useful in such a class of cases as you have seen represented, where you have a good chance to get an accurate impression of the cavity. The amalgam is filled directly into the impression. The surface of amalgam, if thoroughly and properly set, is satisfactory to burnish to. I find it gives an inlay that will fit accurately if carried out carefully. This is applicable to making solid inlays or a sort of shell inlay, as described by Dr. Gilmer. I do not feel competent to describe a shell inlay; it is too complicated.

DR. GILMER: Do you depend upon keeping out the secretions of the mouth by the use of cement more than gutta-percha?

DR. AMES: I have more faith in cement than gutta-percha, and I use it more extensively as a setting material.

DR. EDMUND NOYES: If it is a fact that cement properly mixed and thoroughly hardened before it is wet by the fluids of the mouth, why does it not come into general use as a filling material?

DR. AMES: On account of friction, cement fillings not exposed have proven very satisfactory to me.

In regard to the time consumed in making these fillings or a gold crown, in a case like this I would rather have a gold inlay than a crown with a band extending under the gum.

DR. MATTESON: Why?

DR. AMES: Because there is a much better edge there.

DR. J. J. R. PATRICK: Am I to understand that instead of a gold crown you put the inlay to supply the deficiency without encircling the tooth?

DR. AMES: Yes, sir. In such a case I would aim to cut far enough so that the main force would come on the inlay. It is useful for bicuspid where the palatal wall is gone, leaving the outer wall standing. Where the entire outer wall of the bicuspid is gone I have left the inner wall standing and burnishd gold to that wall, then grind and solder the porcelain face to the inlay rather than cut it down and put a band around the root.

I agree with Dr. Gilmer that if an inlay will avoid the necessity of a band for five or ten years, it is the best thing. Let the banding come later.

I would like to speak of another typical case of the upper or lower incisors or bicuspid, where the surface of the tooth is abraded so that the filling extends across the cutting edge. In such cases I make a regular saddle-shaped filling, which goes on accurately, and is bound to go to the right place. These are especially useful for lower incisors that are abraded and decayed or both proximal surfaces.

DR. G. V. I. BROWN: The reason I think cement will not last so well in cases of a narrow line as it will in a wider one, is simply because I cannot get it stiff enough. The stiffer I can have it the better it will stand in these conditions.

In making an inlay for such a tooth as has been drawn on the blackboard, I would build it up with wax, properly contoured, then take a sharp warm instrument and put it around the edge of the cavity and make a die, simply making a gold plate which will fit accurately.

DR. G. NEWKIRK: In answer to Dr. Noyes' question, it seems to me that there is a great deal of difference between a large cement filling exposed to all the friction incidental to mastication as well as the wholesale action of the fluids of the mouth, and a very narrow almost imperceptible rim of cement which affords but slight access to the fluids of the mouth.

DR. PATRICK: It seems to me that there has been a great outlay of ingenuity and language in describing this wonderful piece of dental mechanism called an inlay. Much stress has been placed upon the properties of cement, the burnisher, and the metals used.

The principles that underlie it all have not been touched. The burnisher is a very good instrument in the hands of one who understands how to use it; if he does not, it is a very mischievous instrument to use. The plugger is a much easier instrument to use than a burnisher. It is easy to describe how an inlay of metal can be burnished into a fractured surface, but to perform the operation is not quite as easy, especially if that fractured surface is where you cannot have free access to it. If you depend upon the burnisher to adapt a piece of gold plate to an uneven depressed surface as proposed, the metal will curl away from the surface, and in spite of all your efforts there will be no adaptation to the cavity or surface; and the more you burnish the further you will be from the object desired. *A thin plate of metal cannot be burnished into an uneven depressed surface to anything like an adaptation*; an approximation might be accomplished if the circumference of the plate used was first turned over the margins of the cavity or depressed surface, forming a retaining border, then with skillful burnishing and constant annealing the metal might be burnished into the depressed surface at the expense of the thickness of the metal.

But this would require great skill with many forms of small burnishers on an object to receive an inlay out of the mouth, how much more difficult it would be to accomplish such a feat in the mouth I leave you to conjecture.

A tooth like the one drawn on the blackboard in which two-thirds of the crown has been destroyed by disease, leaving the buccal third above the gum would be easier and more substantially reconstructed by adapting an entire gold crown, and taking advantage of the projecting one-third of the tooth using it as a post to sustain the metal crown.

DR. BROWN: I am obliged to Dr. Patrick; I endorse what he has said; that has been my experience. I have never been able to make an inlay that was an absolutely perfect fit. I was a little shy in saying so. I can use hollow cuts and gutta-percha fastened with a pin.

DR. L. L. DAVIS: I have never used this method myself, but there is the name of a gentleman on the program who is down for a clinic on inlays, Dr. Hughes, who, as you know, met with an accident sometime ago which necessitated his remaining at a hospital. I had a talk with him in regard to his method of gold inlay, and he says he uses it twenty times where he puts in one gold fill-

ing ; that most of his fillings were gold inlays at the present time. The way he does it, as near as I can understand, is to take three or four large pellets of semi-cohesive gold, force them into the cavity, and instead of using a burnisher, take a good flat plugger and force it to the walls so that it will adapt itself loosely to the walls of the cavity, withdraw that *en masse*, solder and build up the whole piece, using pure gold, leaving enough soft gold overhanging the walls of the tooth so that it can be pressed down readily with the burnisher to the margin of the cavity. I believe he uses gutta-percha in setting and completing the operation.

DR. I. A. FREEMAN : This is a most intensely interesting topic. It would seem to be, in the hands of some gentleman, a new one, but it occurs to me that these inlays have been in use for several years—so long ago as my early days in dentistry, inlays were employed. If I remember correctly our dental depots have kept a stock of artificial or porcelain materials for preparing these inlays. I have used them in practice and have seen the utility of them, although I believe for the last ten or twelve years, it has hardly been possible to find these porcelain inlays prepared in any variety because they were not in demand by the profession, but at one time they were to be had in quite variable forms.

I met a few days since a patient who had been in the hands of one of our profession and who had had several of these porcelain inlays placed in his teeth. I should judge, from what I could observe of them, that they were entirely different from the method that has been employed by the gentlemen who have been talking upon this subject. I think they were dependent for their retention upon the dovetailing principle. The operator had, so to speak, slipped the prepared inlay within the prepared cavity which was upon proximal surfaces and then the extending surface or portion was ground away and polished to fit the margins, cement being used as a stopping.

I have used in several instances these porcelain inlays for the labial surfaces of incisors and cuspids, and have found them very satisfactory. I have used the best cement for filling around the inlay which is known as "Justi's Insoluble," and have no fault to find with it and by its use have had very satisfactory results.

Gutta-percha cannot be depended upon to arrest the secretions of the oral cavity from penetrating around these inlays. I have not been able to find such gutta-percha, when the gutta-percha has been removed without finding moisture within the cavity under-

neath them, especially in moist teeth. I believe it is not claimed by our best writers on this topic that it will exclude moisture. Upon the principle of exclusion of moisture, heat or atmosphere, these fillings or inlays depend for their success. I would like to know how long the gentlemen expect such work as they suggest to last. It seems to me that it must be of a very temporary nature. The first severe test that it is brought to endure it will doubtless fail, and I for one, after hearing the discussion that has been brought out, cannot close without adding a word of caution in the use of inlays. While in the hands of some it may prove successful, yet it does seem to me a rather reckless procedure to adopt them generally.

DR. HARLAN: If the Society will give me three minutes, I will read a method of getting a mould of a cavity for a glass filling which will answer exactly the same as for inlays, which has been prepared by Mr. Henry Weiss, of the National Dental College, of London, and which appears in the April number of the *Journal of the British Dental Association*.

"Taking, for example, a neck cavity in an upper central incisor it is first necessary to prepare the margin of the cavity, that is, to carry this back until an unbroken line of healthy tissue is obtained; for until this is effected it cannot be expected that a perfect adaptation between the cavity wall and the glass inlay will result, for after the inlay has been fused no alteration of the margin line must be made. Having obtained this, a *small* quantity of the deeper caries should be removed; but in no instance should any sensible undercuts exist, as they are likely to prevent the mould being withdrawn. To obtain a mould, gold foil, or platinized gold, of twelve grains should be employed, and I may here mention a difference that exists between the two metals. Platinized gold does not fuse at the same temperature as ordinary gold foil and it does not apply itself so readily to the margins of the cavity, having a tendency to spring from its increased hardness. Having cut a square piece of foil large enough to exceed the cavity to a considerable extent, it is folded into *four* and then opened; by this means we obtain an apex which will pass to the bottom of the cavity. With the index finger of the left hand, the foil is held at the margin of the cavity, and with a small pellet of cotton wool held in the dressing forceps in the right hand, the wool is firmly pressed against the gold, and continued until it has been adapted completely to the margins of

the cavity. The index finger of the right hand may then be freely pressed against the wool and the overlapping gold foil, until it applies itself against the entire cavity, part of the gum, and surrounding tooth. If the gold is not previously folded, it is liable to burst by the pressure of the cotton wool, thus affording a leakage when the glass is being fused."

DR. WOOLLEY: I would like to ask Dr. Patrick which is the better method for preserving a tooth in the condition of the one drawn on the blackboard, an inlay, or an accurately fitting gold crown?

DR. PATRICK: The gold crown by all means, especially for the molar teeth; and the English porcelain plate teeth properly backed and soldered to well-fitting bands encircling the roots of natural teeth, I consider the most substantial method of reconstructing the crowns of teeth by artificial means. I have made inlays with thin platinum and with gold, covered with jewelers' white opaque enamel resembling the tooth nearer than anything else I could obtain, but never thought it worth bringing to the notice of the profession.

In regard to the method of adapting metal to an irregular surface in order to produce an inlay as just read from a British journal by Dr. Harlan, I have little to say excepting that the introduction of cotton wool between the burnisher and the gold is only a modification of the Herbst method of packing gold foil into a cavity, and will do very well for an Englishman who is not, as a rule, as expert in packing gold foil as the American dentist.

DR. L. L. DAVIS: I wish to state that Dr. Hughes makes his inlays by first filling the cavity with gold, and then he removes the filling and flows gold solder over it, and in this manner obtains an inlay that fits the cavity perfectly.

DR. PATRICK: Present my compliments to Dr. Hughes and tell him that a gold filling, however perfectly packed and then removed and submitted to heat sufficient to melt gold solder, would shrink upon itself and would not fit the matrix in which it was formed. I know of no better inlay than a gold filling pressed or malleted to its place and finished flush with the enamel and then burnished.

REPORT OF THE COMMITTEE ON DENTAL SCIENCE AND
LITERATURE.

READ BY J. D. MOODY, D. D. S., CHAIRMAN, MENDOTA.

During the past year there have been no great discoveries, nor any very great advancement along the well-known lines for your committee to report. However, in comparing the past year with former years, we do see the signs of a positive advancement, especially in those higher departments of dental science which we need most to cultivate, if we would be classed with scientific men. For one example, in looking over the three leading journals, we note the following changes: In one, during the year 1889, there were published seventeen strictly scientific articles to twenty-six of a more practical nature. In 1890, the same journal published thirty-four scientific articles to eighteen of the practical. The advance in the others was not quite so marked for the one year, but for two or three years back was nearly as great. There seems to be a tendency among the older journals to a more scientific discussion of dental questions than formerly, and at the same time there has been a multiplication of minor journals devoted more exclusively to the practical sides of the question. This movement seems to indicate that we are surely, even if slowly, advancing from a purely business basis to that of a scientific one.

The formation of a society like that of the Stomatological Club, of Buffalo, New York, marks an era in our professional history. Its membership is not confined to dentists, yet its origin and permanent interest is due to them. The address of its founder, Dr. Barrett, on Comparative Dental Anatomy, before the First District Dental Society of New York, was a long stride in advance of our society and college teaching.

This was really an epoch making address. Dr. Barrett had with him an extensive craniological cabinet. The interest aroused by his address, resulted in the purchase, by the New York dentists, of this collection, to be used as the nucleus of a larger dental museum. Among the articles appearing during the year and indicating a more scientific trend of thought in our profession, we would mention those of Dr. Miller on "The Anatomy and Pathology of Elephant Tusks;" of Dr. Black on "Anatomy of the Teeth," and "Enamel Margins;" of Dr. Thompson on "The Origin and Evolution of the Face," &c., &c.

In looking over the educational work of the year, your committee have been impressed with the desirability of having in our colleges, chairs of comparative Dental Anatomy, and of Bacteriology, and systematic lectures on Dental Jurisprudence. We wish especially to emphasize the position taken by Dr. W. D. Miller, in his article on "Bacteriology as an Integral Part of the Dental Curriculum," published in the *Cosmos* for February, 1891.

We note with gratification, the general adoption, on the part of the colleges, of the three years' course, as suggested by the Association of College Faculties. This will give greater opportunity, and ought to give vastly better results in the future.

One of the most suggestive papers of the year on dental education, is that of Dr. Ottolengui, read before the American Dental Association at its last meeting. In it he proposes a new degree, a national one, that of "D. O. S." (Doctor of Oral Surgery).

Four years ago Dr. Black suggested to the writer "D. O. S." (Doctor of Odontological Science), as a new degree. It would be more comprehensive than the former one, and more scientific.

Graduate work of some kind is at present attracting a great deal of attention. Your committee would like to suggest that perhaps some modification of the now famous University Extension System, may meet the needs of dentists. The college that will take it in hand and make a success of it will achieve renown to itself, and confer a lasting benefit on the profession.

The call for a dental congress to be held in Chicago in 1893, is one to which Illinois dentists should give especial attention. Being in our own State we should take the initiative in making it a grand success.

As an improvement in journalism, we note the very full index of the *Cosmos* for 1890, not alone to the signed articles, but also to the proceedings of societies, including both the subject matter and speakers' names. We venture to suggest, in the interest of scientific journalism, that the publication of the names of dental graduates would better be discontinued. The medical journals do not print them.

In looking over our own society reports, two suggestions in the way of improvement came to our minds: first, a uniformity in the binding and lettering of our "Transactions," (this is not meant to be a reflection on past committees), only a suggestion in the interest of improvement; and second, this, the papers read before our

society are, and of necessity must be, of unequal excellence. Frequently a paper is read solely to induce discussion without any thought as to its literary qualities, or the embodiment of new ideas. Then again, it is necessary that we bring new and untried men to the front. It is not to be expected that the tyro can present to the public a finished work or one worthy of preservation. The indiscriminate publication in our "Transactions" of every paper read before the society, decreases their value and lowers their scientific standing. This should not be so. It is not the custom in other scientific bodies. If the valuable papers of the year read in such societies will not make a fair sized volume, they are retained until a sufficient number are obtained. The yearly volume should be of a more permanent character than the magazine, and greater caution should be taken in arranging its contents. What may be perfectly proper in the magazine may be out of place in the other.

Were it possible to make this change our reports would have a higher value, and it would be an honor indeed to have one's name appear in them.

It may not be expedient to make this change at the present time, or in fact, at all. There may be a question whether the design of the transactions will admit of the change. But were it possible, it would be in the interests of an ideal scientific dental society. We only throw out the suggestion to arouse thought.

Pyoktanin is one of the new remedies of the year, which, like so many others, has had its brief day. It was, and is yet, very highly praised by some prominent men, while by others as highly condemned.

Aristol has been brought forward to take the place of Carbolic Acid and Iodoform. In the *Cosmos* for August, 1890, Dr. W. D. Miller has an article on, "*The comparative value of various antiseptics in the treatment of diseased teeth*," in which he details elaborate experiments with new and old remedies. Though these experiments are not yet completed, they point to the conclusion that we have no new remedies to take the place of bichloride of mercury, carbolic acid or the diffusible stimulants so strongly advocated by Dr. Harlan. He is very positive that iodoform has but little value for dental use.

Dr. Charles B. Atkinson makes a strong plea for the use of medicated oxyphosphate fillings. The advantages claimed are:

First,—a remedial agent, in constant contact with the walls of the cavity.

Second,—Germicidal action of the filling on the tissue with which it comes in contact.

Third,—A neutral influence resisting solution.

Fourth,—Increased hardness, varying somewhat with the agent used.

No extended report of its trial has yet been made.

The past year has been prolific of local anæsthetics, many of them bearing the indorsement of prominent names, nearly all are to be used hypodermically. Some are known to contain powerful drugs, although the majority are secret preparations. A dentist would commit a grave error, to say the least, to inject into the tissues a preparation of which he does not know the formula. There are substances entering into the composition of some of these preparations which should only be used with great caution, and even then only by a thoroughly competent person.

No satisfactory obtundent of sensitive dentine has yet been given us, neither do the investigations being made point very strongly to any one theory out of which we can hope for a successful solution. The same may also be said of the cement fillings.

Prof. A. B. Macallum, of Toronto, is at present conducting experiments, looking especially into the office and work of iron in the animal economy. These experiments seem to foreshadow that some of our ideas in regard to the assimilation of inorganic materials will have to be modified.

Some recent work of Dr. A. O. Hunt makes it probable that the pulp does not receive its blood supply, as has been generally supposed, directly from the artery through the apical foramen; but that the artery breaks into capillaries, passes into the cancellous bone about the teeth, is distributed to the peridental membrane and from it to the pulp through the apical foramen, or a number of foramina in the root.

New methods of root filling are being constantly presented, but they seem more notable for their novelty than for their value. Chloro-percha and the cements are still relied on by the majority of dentists. The tendency of opinion is toward chloro-percha or something of a viscous or vaseline like nature.

In operative dentistry, the Herbst method of glass filling, and

the Stoddard method of porcelain filling, promise good results, especially from an asthetic point of view.

A paper on the "Interproximate Spaces," and a series of papers on the Management of Enamel Margins, all by Dr. Black, are of more than ordinary interest from the scientific way in which they have been treated.

In orthodontia there is nothing especially new. The tendency seems to be toward some modification of the more simple wire springs rather than to the more complicated apparatus.

Dr. Case offers a valuable suggestion in the use of jewelers' enamel for filling spaces in metal work. There may be possibilities with this material beyond the suggestion noted.

The changes in crown work are but of minor importance, and concern detail rather than principles.

The great reduction in the price of aluminum ought to bring that metal into more general use, especially since it seems to be authoritatively asserted that a simple solder has been discovered for it. An aluminum amalgam has been lately announced and a considerable degree of merit claimed for it.

Electrical power is gradually becoming a necessity in the dental office, hence a cheap source of a plentiful current is demanded. In large cities where there is a constant supply, day and night, it is easily obtained, but in the smaller towns it is a serious problem. The batteries used with the electric mallet have not proven satisfactory for motor, cautery and other purposes. Some form of the storage battery seems to be indicated. The difficulty of charging these cells has been overcome by using the common gravity battery, such as is used by telegraph companies. It is easily managed and requires but little attention. After much experiment, it has been determined that sixteen cells, of the six by ten jars, or two series of eight cells each, will give, when in constant connection with the storage cells, a current sufficient for the demands of the mouth lamp, for cautery purposes, for light grinding and polishing, and for running the engine.

When the storage cells are fully charged, the gravity battery acts upon itself, quickly using up its elements, therefore no more cells should be used than are necessary to meet the demand. For a small practice, two series of six cells will be ample. Care must be used in charging storage cells from a dynamo, as they may be injured by an incompetent person. It has furthermore been found

that storage cells remain in a better condition when constantly in use, and constantly receiving a current.

The most notable literary event of the year was the publication of Dr. Miller's work on "The Microorganisms of the Human Mouth." It is the only book on the subject. It is so complete that it will be long before it will be superseded. It should be in the hands of every dentist, even though he may not wish to experiment for himself.

"A Treatise on the Irregularities of the Teeth," Vol. I., by Dr. J. N. Farrar, is a book setting forth very fully the conditions and theories underlying the use of regulating appliances. It is mainly an exposition of Dr. Farrar's own well-known ideas and methods. If any criticism might be made, it would be that his subject has been extended to undue proportions.

DISCUSSION.

DR. LOUIS OTTOFY: I have listened to the report of the committee with a great deal of interest, and I think it is one of the best reports we have had for many years. The reference the speaker has made in regard to scientific articles in dental journals is one that is very appropriate at this time. Journals devoted to dental science will furnish scientific articles just as fast as scientific dentists will write them and as fast as scientific dentists will read and appreciate them, but you must remember that there are dentists at present who discontinue subscriptions to their journals because the contents are too scientific, and as a dental journal is as much a business venture as anything else, there must be something else mixed with science. I agree with what the speaker has said in regard to the character of dental journals.

Respecting the establishment of chairs on bacteriology and dental jurisprudence in dental colleges I fully agree with him. I think the subject of dental jurisprudence is one that now and then comes up, and when it does come up it is important for us to be posted in regard to it, or at least we should be able to find something on the subject. It is next to impossible to find anything at the present time.

As to the establishment of a new degree, I disagree with the chairman of the committee. I think we already have too many degrees. It would probably be better to abolish the degree entirely and let the dentist be simply known as "Mr." If a new degree is

established it should be an extremely high one, requiring a great deal of knowledge to acquire it.

The university extension system, or something after the nature of post-graduate study that goes outside of the reading of the dentist in his own profession, I think, ought to be left entirely to the individual selection of each man. I do not believe the Chautauqua movement or movements of that character should come into the post-graduate course of dentists. The dentist should be broad enough to select the character of reading he desires without being forced into it.

I hope what has been said in favor of an International Dental Congress in 1893 will be acted on by everybody, and that preparations will be made to make the Congress a successful one.

The point in regard to abolishing the publication of the names of dental graduates has been discussed by the journal with which I am connected, and we thought some of omitting that practice this year, but we did not do so. Possibly we shall do it next year. At present the list of names is of some historic value. It is convenient oftentimes in looking up the list of certain graduates of a college. From these lists it is a comparatively easy matter to find the name of any particular member, the State he came from and other information of that character.

DR. BLACK: I wish to say a word in regard to what has been said by Dr. Hunt with reference to the blood supply of the pulp of a tooth not coming directly from the main artery in the inferior dentinal canal, or from the main arteries of the upper jaw. I think the matter has been very much misunderstood, so far as the expressions I have heard in regard to it are concerned at least. I am quite well acquainted with Professor Nutting, who has prepared the specimens upon which these conclusions have been based, and I will say that the conclusions and what the specimens show agree with what I have seen myself. If there is a difference it is only a difference in the manner of explaining this matter. As you all know, if you take up the text-books and examine the illustrations you will find a branch of the artery coming directly from the inferior dentinal artery to the end of the root of the tooth. As a matter of fact there is no such thing. We do not find it in nature in that shape. We find that many arteries come from the inferior dentinal artery and pass to the bone of the alveolus round about the tooth—not directly to the root of the tooth, but to the interstices of the

alveoli between them, and these we find richly supplied with blood vessels. If you get good injections you will find this blood supply very rich. Sometimes we find a twig that bends backward to enter the dentinal foramen and supply the pulp of the tooth. There is no branch passing directly from the inferior dentinal artery to the foramen entering the root canal, but this blood supply comes from any direction about the tooth, comes from the very rich blood supply about the roots of the teeth, to the peridental membrane, the bones surrounding, or the walls of the alveolus, and enters the foramen from this or that direction (illustrating). I find it entering in this shape, the artery which you see given off from the main artery here breaking up again and passing in various directions. It is impossible in many cases for us to tell which way the blood passes in those arteries. It may come from half a dozen different directions and enter the foramen and pulp chamber. I have no doubt it passes sometimes one way and sometimes the other in some of the vessels you see illustrated here. The anastomosis is so rich that it is hard to find which is the proximal end of a vessel. Take, for instance, the tooth of a kitten two months old. You will, perhaps, find a dozen twigs entering the dental foramen. As the animal grows older there will be fewer of them and the foramen will be smaller. In man we will probably find but one artery entering the foramen. In children you will find half a dozen, and before the root is fully formed you will find hundreds of them entering the pulp from all directions, but as the foramen decreases in size they are shut off until there is but one.

I have spent some time in examining Professor Nutting's specimens. They are as fine as anything I have ever seen so far as technique is concerned. He has been doing a large amount of work on this subject, and will shortly publish his results.

Dr. TAYLOR: If I understand the matter correctly there is no physiological change.

Dr. BLACK: You are right; there is no physiological change. So far as the peridental membrane is concerned, you may cut away the apical portion and the rest of it will have a perfect blood and nerve supply; or, you may reverse it, you may cut away the cervical portion and yet have a perfect blood and nerve supply to that which remains. The distribution is so exceedingly rich that you

may tear it away from the end of the root and neck of the tooth and not disturb the supply of the remainder of the membrane.

DR. TAYLOR: You can have a nerve supply where the apical foramen is cut off, can you not?

DR. BLACK: If the apical foramen is cut off the pulp is gone, but the peridental membrane is intact.

DR. HARLAN: In making a few remarks on the report of the committee on Dental Science and Literature, I wish to call the attention of the Society to omissions of the scientific portion of the report; first, a method of preparing hard and soft tissues, as detailed in a paper read before the Odontological Society of Great Britain, by Mr. J. Howard Mummery, which was reprinted last year, showing how tissues may be prepared in a most perfect manner. I also desire to call the attention of the Society to the third edition of Sewill's "Dental Caries," which has been well illustrated by his colaborer, Mr. Charters White, of London. This work is worthy of the careful attention of the thoughtful members of the profession. The very excellent paper of Dr. R. R. Andrews on the "Development of Enamel" is also a paper that is well deserving of notice at the hands of this committee. I would not venture to call the attention of the Society to these omissions if it were not for this fact, that since the establishment of the committee, for lack of time or too much preoccupation in other fields, perhaps, the committee have failed to perform the duties they were expected to do by the Society, and that was to make a report on dental science and not start in with the stereotyped sentence that "the different lines of scientific work and investigation have revealed no notable discoveries."

The point I wish to make is this, that the chairman of that committee should be a subscriber to every scientific periodical that is published relating to dentistry. He should know what is going on so that he can give the members of the Society the benefit of his accurate and careful examination of these publications. If there be a book published he should procure it, and, if necessary, charge its cost to the society, so that the members of the Society can get it in this way.

The very excellent and unique work by one of our own members, Dr. Black, receives no mention whatever, although it appeared since the last report of this committee. It was noticed in last year's report but the book was not yet issued.

These criticisms of the committee I offer in the kindest spirit. They are offered in the hope that the members of the committee will adopt some systematic plan--a plan much better than they have followed for the presentation of the real original work in dental science and literature during the year.

DR. MOODY: In answer to Dr. Harlan, I will say that the omission of any mention of Dr. Black's book, was because this committee mentioned it last year. In other places in this report his work has been mentioned.

The matter pertaining to the new degree was given merely as an item of intelligence, to show the trend of thought in the profession, and was not intended to be an indorsement by the committee. The work of Dr. Andrews was mentioned last year and the committee thought there was no necessity of mentioning it again this year.

With reference to Sewill's "Dental Caries," and Mummery's pamphlet on "Microscopical Sections of Teeth and Bone," I am glad that Dr. Harlan mentioned them, as the committee had entirely overlooked them.

We need just such a work as this of Mr. Mummery, and I am glad to place it on record.

WHAT SHALL BE DONE WITH THE CONDEMNED PULP?

BY CHARLES P. PRUYN, M. D., D. D. S., CHICAGO.

The proper treatment of the dental pulp is a subject that, perhaps, has elicited more thought and discussion during the last score of years than almost any other subject pertaining to the practice of our art. And without a proper conception of the anatomy and physiology of this organ, all remedial measures and appliances will prove futile in the treatment of diseased conditions.

It is seldom that we pick up any of the dental journals without noticing in the table of contents a paper relating in some way to the discussion of this subject.

About fifteen years since, the profession generally were capping pulps in all conditions of exposure, regardless of the condition of the part to be operated upon, the condition of the blood, or the condition of the nervous system of the patient. Blind empiricism was the method pursued by nearly all; simply following a rule or method that some one had suggested or had tried and had reported favorable results therefrom.

I well remember the first year I attended this society, which was in the year 1876, when our meeting was held at Galesburg. I was then astonished at the claims made by a large number of the gentlemen who took part in the discussions that year, who claimed to be saving such a large number of pulps by the use of oxychloride of zinc. The most of these gentlemen were older than myself, and described their methods of treatment with great fluency; and it seemed to me that if the general consensus of opinion was so favorable to capping and preserving the pulp under such varied conditions, that it might be possible for me, a young dentist, to follow the methods advocated. I did so. In many cases to the sorrow and regret of both my patients and myself, as time proved. A few years later the subject of capping pulps was hardly touched upon by this society. Other subjects seemed to be of greater importance. A few years later still, and many of these same gentlemen who had previously reported such satisfactory results from capping seemed to have changed their minds, as they freely admitted that many failures had resulted. So that for a time the pendulum seemed to swing to the other extreme; that is, to devitalization and removal, rather than to attempt to cap the pulp under *any* circumstances. But now we have, I think, arrived at the golden mean between the two extremes, and are in a better condition to understand and scientifically treat this important organ.

The former method of capping by considering the local conditions only, has been the reason why pulp capping has so fallen into general disrepute among a large number of the profession. But now as we have become more thoroughly educated, so that we are the better able to apprehend and comprehend the different signs and symptoms of diseased conditions which affect the whole organism, are we the better able to satisfactorily treat disease.

I think I realize to a considerable extent, however, that specialism is very apt to dwarf our mental vision, so that the specialist is often accused of seeing only just that particular part of the body which he is accustomed to treat and nothing else, thus wholly losing sight of the complex relations of things, and of how one diseased member of the body may seriously impair the usefulness of another member, even quite remote from the cause; and it is upon a knowledge of the reflex conditions, that prevail in the human body, that the physician becomes an expert in diagnosis and prognosis. How easy it is to become what is known as a machine doctor, who has a

certain form of prescription for nearly all diseases. How easy it is to fall into a rut and become a machine dentist, who performs all operations after one stereotyped plan. I well remember the advice given me by one of my medical teachers, a noted man, a savant of the savants, which was this : In the treatment of all diseased conditions, always remember these three things: First, the condition of the part ; second, the condition of the blood ; third, the condition of the nervous system. If we eliminate only one of these three from the tripod our structure must fall; but with the three standing together, we may erect a knowledge of the conditions that prevail which will enable us to apply our art and thus save, where otherwise we would destroy.

But more directly to the subject. This subject of "what shall be done with the condemned pulp" was given me a few days since without my solicitation. I was requested to take this subject and fill the place of another, who from illness was prevented from taking his part upon the programme assigned. Just what was meant by the committee who got up this subject I have failed to comprehend, and I see no other way out of the dilemma than to appear as the attorney for this criminal, who, it seems, has been condemned by some authority to capital punishment. Why he has been condemned I know not ; and it behooves us now to inquire into the cause and see who the authority is that has condemned him ; to see what crime he has committed that he should be condemned. I would first ask, has he been condemned by the highest authority in the land ? That is, has he been condemned by one who has had an experience in scientifically treating exposed pulps, or has this pulp been condemned by one who has been faulty in his manipulation as well as in his knowledge of diseased conditions and has thus failed in preserving pulps ?

If we should find upon closer examination and cross-examination that this criminal before the bar of justice, has become a chronic offender so that he has caused a general disturbance of the whole nervous system, or if he is an old and hardened sinner, we should say that there was only one thing to be done, that is to let the law have its full course.

But it is possible that he has been unjustly condemned, or, rather, that this pulp is in the mouth of a patient under thirty years of age, strong and healthy, neither ænemic nor plethoric, nor rheumatic, nor neurotic, with the vital powers at full ebb, not hav-

ing been injured by excesses or dissipations, which sap the vitality, or alcohol, or opium, or tobacco, with only a slight exposure and a slight amount of inflammation, we should say that this criminal had been unjustly condemned, and that with proper treatment he might be saved for years and again become an ornament to society and a comfort to himself and his possessors.

But if the converse of this should be true, then we should claim that he had been justly condemned. That is, even though the condition of the part should appear to be in a fairly healthy condition—with only a very slight exposure and a small amount of irritation and inflammation and congestion, if the patient were thirty-five or over, and ænemic, or plethoric, or rheumatic, or neurotic, or the recuperative processes in any wise below par, we should say that his condemnation was just and right. And now the question arises: What disposition shall be made of this criminal? How shall we dispose of him and his remains, and how shall we fill in society the place that has been made vacant by his removal?

There is only one method of devitalizing that has been generally adopted, which is by the use of arsenious acid. Other methods there are to be sure, but this has been the method most generally adopted, and, while it is open to some objections, it still does the work, all things considered, better than any other method. It has been claimed, however, that it almost always causes pain, more or less severe, lasting from one to several hours. But my experience has proven that the pain thus caused has been from a faulty application of the remedy, rather than the action of the remedy *per se*. That is, knowing the extreme escharotic action of the drug, we have been very desirous of perfectly sealing the remedy directly in contact with the pulp and thus limit its action to the pulp, rather than to allow it to ooze out and come in contact with other tissues and so do great damage, we have frequently caused simply mechanical pressure upon the inflamed pulp, which has produced the pain, rather than the action of the arsenic itself. That is, the same amount of pressure brought to bear upon the pulp without the arsenic would undoubtedly have caused nearly, if not quite as much pain. An hundredth of a grain of arsenic will do the work just as well, and even better, than a larger quantity.

Arsenic should never be applied to a pulp in an acute stage of inflammation. When it becomes necessary to destroy a pulp that is highly inflamed, the first thing that should be done is to remove

the loose debris within the cavity, always supposing the rubber dam to have first been applied. Then, if there is considerable congestion, this should be relieved by slightly puncturing the organ and allowing a small amount of blood to ooze away. Then apply an anodyne. I am not very particular what that anodyne shall be. There is a long list of remedies that would do the work equally as well. Most any of the essential oils that are commonly used would do, such as the oil of cassia, or clove, or some of the more recent remedies, such as eugenol, or terpinol, or a host of others that I need not mention, any one of which would probably answer the purpose. Let this be carefully sealed, without pressure, upon the pulp for a period of from one to three days, according to the state of inflammation and the condition of the parts. At the expiration of that time this dressing might be removed, and, if the inflammation has sufficiently subsided and the tooth has been comfortable in the meantime, an application of arsenic would be proper. This might be left in from one day to a week, according to the age of the patient. The older the patient, the longer time it might be left in with safety, although the destructive action of the arsenic will probably have taken place within a few minutes after its application. So there is no especial advantage in leaving the arsenic in any great length of time. Applied in this manner, there should usually be but a very little inconvenience and perhaps no sensation from its presence.

Upon removal of the arsenic, I should advise an application of tannin and glycerine, to tan, or harden the pulp, if you please, which will thus admit of its easy removal in a whole mass, rather than in shreds or particle by particle. This remedy might be left in three or four days, and upon its thorough removal, always under antiseptic precautions, and complete dehydration of the pulp canal and dental tubuli by the use of the Woolley, or some other equally as good root dryer, a root filling might be inserted. But if there should be a failure in completely removing all of the pulp, so that there was a possibility of some shreds of animal tissue still remaining in the tooth, apply some alkaline solution, such as bicarbonate of soda or common table saleratus, or aqua ammonia, which would saponify the animal tissue remaining, or in some way render inert the disease germs that are interested in pus production, and at a subsequent sitting admit of its easy removal. Then with the use

of hydrogen peroxide and some good antiseptic dressing, proceed as before to dehydrate and fill.

Another point might be mentioned. That is, always use the rubber dam. Never use water for washing out a canal, but use H^2O^2 .

Another point: Never insert any instrument in the pulp chamber or canal that has not been recently sterilized. It is not a difficult matter to sterilize your instruments as many suppose. I should not advise for this purpose the use of the bichloride solution, on account of the injurious effect that bichloride has upon steel instruments. There are however a large number of other remedies that can be used for this purpose just as satisfactorily as a sterilizing agent as the bichloride solution. I would not for this purpose depend upon a 5 per cent solution of carbolic acid, as it would be altogether too weak to destroy the disease germs that might be present upon the instruments when subjected to a very transient bath in the same. A weak solution of the oil of cassia, or of eugenol, or of terpinol, or of campho-phenique. Any of these remedies are easily obtained and can easily be kept in the operating case in a small, large-mouthed bottle, ready at a moment's notice to have the broaches dipped into the remedy before putting into the pulp canal.

Another method of devitalizing that is known as the heroic or "knocking out" method is warmly recommended by a number of gentlemen who have practiced it. It seems, however, to be applicable only to the single-rooted teeth, although there are some enthusiasts who claim its general adoption in their practice. But I fail to see how it can be successfully used in teeth that have more than one root. I have had a limited experience in its use with the six anterior teeth, and in every case where I have used it, it has been eminently successful, and strange as it may appear, painless. This method as you know is to take a piece of orange-wood or hickory and trim it to an even, conical shape, about the size of the canal into which you wish to introduce it, and then, having previously dipped it in carbolic acid, with a quick blow drive it as far up the pulp canal as possible. Then with a little twist remove, when in most cases the pulp will come out upon the piece of wood entire. It seems almost incredible that the pulp of any tooth could be destroyed and removed in this way without causing very severe pain, but when we have the testimony of a

large number of reliable men who are employing this method in their regular practice, almost daily, and the testimony of the patients who have been subjected to this treatment, we must admit that there is something about it that we do not yet fully understand. The sudden and complete removal of the pulp undoubtedly has many points in its favor, for if it can be entirely removed at once, without the possibility of putrefactive decomposition setting in, with its long train of evils following, it is certainly preferable to the tedious and somewhat uncertain arsenical method.

I have an idea that the method of the future will be the use of the electrical actual cautery, as it seems to be correct in theory, but yet remains to be proven correct in actual practice.

DISCUSSION.

DR. J. G. REID: I hardly know how to introduce this subject. There is so little to be said that is new, and the paper itself coincides so nearly with the correct practice, as I understand it, that it seems to me almost impossible to add anything further than what has already been said.

However, in the capping of pulps it was up to within two or three years ago, my habit to condemn nearly all pulps that came under my treatment. I have changed my mind somewhat in that direction and have been endeavoring to save pulps; adopting the method pursued by Dr. Cushing; and as a consequence I have been entirely successful in saving a great many pulps that I formerly condemned. I do not know that it is necessary for me to repeat that treatment because it has been published already in the transactions of this Society in years gone by—two or three years ago probably—but I will say this, in the covering of the pulp, I think that it requires a great deal of delicate manipulation in order to avoid producing pressure upon the pulp. I think that is one of the most essential features possible to be observed, provided the pulp is in proper shape to cap. I think the use of copal ether varnish avoids or prevents very largely, when it is properly hardened, any undue pressure which might be caused from the subsequent capping by oxychloride or the oxyphosphate of zinc if that is used. It also prevents any irritation by these fillings if oxychloride is used, and I will say that is what I use, and I have very little trouble with any subsequent pain. It makes a very successful capping. Successful pulp capping resolves itself into this one thing,

that we must have a thorough understanding of pathological conditions, before attempting so delicate an operation.

In the application of arsenic during the inflamed condition I think that what the paper stated is very largely true, that arsenic should not be applied when the pulp is in the condition mentioned, because if it is we will frequently produce a great deal of unnecessary pain, because of the uncertain action of the remedy under such circumstances. Arsenic being a severe escharotic, in order to avoid pain incident to its application the arsenic should be applied in an uninfamed condition as near as possible. I usually leave the arsenic in two days, or forty-eight hours.

The paper failed to observe one very important point, and that is in regard to the use of dialyzed iron as a subsequent application. This remedy should be used generally, after the arsenic has been removed, because we are not always certain that this remedy is carefully applied. Some use the rubber dam before making arsenical applications, but there are a great many who do not observe this important precaution.

There is another important point I wish to call your attention to, do not attempt to seal arsenic into cavities with sandarac varnish.

I use Fowler's stopping and it works nicely. I can place it in the cavity in such a way as to avoid pressure. Dr. Black has demonstrated it before this society a number of times that the red gutta-percha can be placed in a cavity almost universally without producing pressure upon the pulp in retaining arsenical preparations. I use red gutta-percha sometimes for this purpose. Tannin and glycerine, after the use of dialyzed iron, are useful agents. They are agents which tan the pulp so that it will shrink and be easier to remove. These should also be confined with a proper stopping to make it the most successful. I do not always do it myself, but when I do so I usually confine it with the red gutta-percha, puncturing an opening in the filling with a small instrument, and discharge the patient for a week or ten days. In attempting to remove any residual pulp that might be left after mechanical operations, I think that caustic potash would probably be a more reliable saponifying agent than any of the remedies suggested in the paper. However, they will do their work, but the agent I use is caustic potash. I think that we possibly give ourselves the credit of removing pulps a great deal better than we actually do it. In a

great many instances if we could only see into the pulp canals we would find a great many pieces of pulp left, even after the most careful and conscientious work which can be given them. I am satisfied of this, and those agents that have been mentioned for the removal of the remaining pulp do assist somewhat in this direction. I have found that resorcin is a very useful agent for dipping our instruments into. Knocking out pulps I believe is a barbarous habit, and it certainly is falling into disrepute. I do not believe that it is a successful way to remove pulps. I do not think it can be done successfully, even with single-rooted teeth.

DR. C. N. JOHNSON: It is sometimes the case that we cannot wait eight or ten days to remove a pulp after the application of arsenic. It is occasionally necessary to do it in twenty-four hours, and these cases used to annoy me a great deal. The pulp is usually very sensitive to the touch and this makes it difficult of removal. I have been treating such cases for the last year or two in the following manner. It will be found that no matter how susceptible the pulp may be to pressure, it is seldom sensitive to heat. I apply alcohol and then use hot air until the pulp is dried. The drying relieves the sensitiveness to touch and hardens the tissues so that the barbs on the broach will grasp them to good advantage. If the operator perseveres with the drying process long enough he can usually remove the pulp with little or no pain. This plan is adopted only in those cases where we have not the time to wait for the tanning process as advocated in the paper.

DR. I. A. FREEMAN: Some thoughts have been suggested by the discussion on the paper which were not expressed in the paper itself, which seems to me should be kept in mind. In the use of arsenic in the destruction of pulps, great caution is necessary. So far as perfectly sealing the external opening or orifice of the cavity is concerned, all concede that great care should be observed. We were told yesterday that there are extra foramina opening through to the mucous or other membranes adjoining or surrounding the teeth. Sometimes we find that these openings are quite free in a certain sense. It has been my experience within the last few months or year past to have seen at least two instances where there had been considerable inflammatory action set up after the use of arsenic in minute portions. For stopping, the oxyphosphate of zinc I regard as the best preparation, because if we can make a stopping that will exclude moisture and protect the cavity of the

tooth from decay we can protect the internal matter from passing out upon the external membrane, and I use it for that purpose. As I have previously said, I have had two instances where considerable inflammation has been set up, which I have attributed to the action of arsenic, although the arsenic was used in minute quantities. I have not been able to account for it in any other way. I want to ask some one to tell us how dialyzed iron neutralizes the effect of the arsenic and how it should be applied, because we may be at fault in that particular. I used the dialyzed iron in one of these instances quite freely. It seems to me that the action of arsenic is not fully understood, and I believe the paper did not state how it affects the pulp. Its action may be immediate in some instances, and in others it may not be, but we know this, that its action is of a progressive character, and it will insinuate itself even through the membrane of the tooth and affect the pulp if there be no exposure. We should not use arsenic for the obtunding of the sensitiveness of dentine. In a recent number of one of our journals I saw a preparation recommended in the treatment of sensitive dentine, and if I remember correctly, this preparation contained arsenic. Our good friend, Professor Ingersoll, believes that arsenic has its action in one way, while many members of the profession believe it acts in an entirely different way. However, as regards its action the matter is unsettled. We know that destruction results from its use, and how long we should leave the applications of arsenic in is a question, because in some instances we find that almost immediate action takes place, and in others we seem to have but little effect from it. We certainly need to exercise more caution in its use, and which may be understood to be in part, the preparation of the cavity in such a manner that we can perfectly stop the material used within the cavity. This is one thing that is very essential. In many instances in the past I have been able to remove the pulp without pain within a very few hours after its application, whereas in other cases it has taken weeks to obtain the same results.

DR. MCINTOSH: It seems to me that the indiscriminate use of this tannin material—I do not know in what proportion it has been used, whether a saturated solution or not—in every tooth should be carefully guarded against. I have seen very badly discolored teeth from the use of tannin, especially if the filling retaining the medication has for some cause been removed. I would not think of using

tannin in any form in the six oral teeth where the crowns are on, or the bicuspid on either side adjoining. I think I get as good results by using equal portions of pure wood creosote and oil of cloves in the same manner as tannin and glycerine, and do not have any objectionable results from it. I have lately been using katharmon in place of peroxide of hydrogen, and think it is preferable. I also think it is a germicide, and do not so consider peroxide of hydrogen, and I would recommend it to the profession.

DR. W. A. STEVENS: The older members of the profession consider me a crank in the matter of exposed pulps. I think I stated some six years ago in this society that I did not believe there ever was an exposed pulp that was saved for two years, and I am yet of that belief. I would like any man to show me one that is actually exposed, capped and alive after two years. I await their demonstration of this fact. You speak of a healthy pulp or a healthy exposed pulp, a term that has not been used at this meeting of the society. It was frequently used in the discussions at former meetings of the society, in fact, ever since I was a member of it. I tell you, gentlemen, that there is no such thing as a healthy exposed pulp any more than there is a healthy broken leg, not a bit of it; it is unhealthy the moment it is exposed. My attention has been called to two or three cases in which I had permission to remove the oxide, or whatever was put over it, the patients themselves claimed that they were exposed pulps capped by Dr. So-and-So. In three of them there never was nor could have been an exposed pulp. It was sensitive dentine, yet the patient was told the nerve was exposed and it must be capped.

In regard to removing pulps with a wedge—you get an exposed pulp about as big as that (illustrating), yet you put your instrument down there and the patient will designate to you it is there, because he is very apt to close his lips and raise himself up in the chair.

In a recent number of one of our dental journals I read an article by a gentleman whose name I cannot at present recall. His argument seems plausible, and yet in some respects I doubted his ability to perform the operation he had reference to, the same as I doubted the ability of a certain professional gentleman of this society looking into a tooth and observing the pulsations of the blood vessels in it. If any of you have seen it you have better eyes than I have. His process is this: He takes a hypodermic

syringe with a small point, grinds the end of it, places it immediately over this exposed nerve (illustrating), using a 10 per cent solution of cocaine, and presses it. It causes a little pain at the commencement, but he holds it there for a minute or two and then excavates and clears the pulp out without any pain to the patient.

I have not yet with all my experience been able to save a tooth with the nerve left in it after it has been exposed. I had a patient not long since, although he has recently passed away, whose circulation was bad, as a consequence of poison in his system through some other troubles. In filling a tooth for him I caused a small abrasion on his lip. It was over three weeks before it healed and before I could proceed to operate on his tooth again. In such a case as that we have to take into consideration the physical condition of the patient, and the possibilities and the impossibilities of doing anything. I do not think his teeth could have been saved for any great length of time. I managed to save them so that at no time had there been an exposed pulp, but there was extreme sensitiveness in certain portions of the dentine, which to my mind has many a time been called "exposed pulp."

DR. GILMER: I do not propose to say much on this subject, yet I would like to take exception to some of the remarks of the preceding speaker. He deserves to be criticised, and yet I do not know that I am capable of doing it with sufficient severity. I appreciate Dr. Pruyn's paper, think it is timely and pointed and should draw out much discussion. In the first place I wish to say a word with regard to exposed pulps. Dr. Stevens says that some one of his patients had five teeth in which somebody had capped or pretended to cap the pulps; that he found after removing the filling that the cavities were not deep enough to have reached the pulp chambers and he concludes there was no exposure. If Dr. Stevens will examine a few sections of teeth he will find the horns of the pulps in teeth often running well up into the cusps, this is especially true of lower molars. I have a young patient at present who has these "measly" teeth in which there had been an arrest of development by an eruptive fever, and one horn of the pulp reached very near the surface. I came upon it almost immediately beneath the enamel, had I capped it, and had it fallen into Dr. Stevens' hands a few years later, after a new deposit of dentine had appeared, he might have supposed upon removing the cap that there had never been an exposure. These may have been the conditions in the case he

cited. The subject of "knocking out pulps" was touched upon, and the gentleman who opened the discussion said that it was a barbarous practice. I do not consider it barbarous. Dr. Stevens said that when there was but a small opening into the pulp chamber that you could not drive a stick through this hole. No one would ever try to drive the stick into the chamber until the opening was enlarged, by the use of small excavators inserted in the opening into the pulp chamber and withdrawn, cutting off small parts of the dentine until there was sufficient room obtained, using carbolic acid to obtund, rendering this part of the operation nearly painless. Dr. Stevens also says that he would like to see the man who could see a pulp pulsate. There is perhaps not another gentleman here who has not seen the pulsation of the pulp. He does not believe that there is a pulp living which has been capped two years. I would like to ask the gentleman a question. Suppose, for instance, an intelligent practitioner should say to him that he had in his mouth an exposed pulp, which, when treated, was hypertrophied until a portion of it extended out of the pulp chamber, and that this hypertrophied portion had been excised and the remainder capped, and that it is just as sensitive, after fifteen years, to thermal changes as any other tooth in his mouth, what would he say?

DR. STEVENS: I would say this: According to the theory advanced by Dr. Black, life and sensation exist about the nerves and the circulation of the blood in the membrane around the root of the tooth and not through the center.

DR. GILMER: You say that the pulp is dead, and that sensation comes from the nerves of the peridental membrane. That may satisfy Dr. Stevens, but I hardly think it will satisfy most of the gentlemen present. We do save many pulps by capping. For a time I discontinued the capping of pulps with oxychloride of zinc, using instead oxyphosphate. During this time I had frequent failures. I attributed the results to something in the oxyphosphate and abandoned it, commenced the use of oxychloride of zinc again with better results.

Saponification of dead pulps has been mentioned. I am not clear on this matter, do not believe a soap can be made unless there is fat as well as an alkali to make it with, and there is no fat in the pulps of teeth that I have been able to see. A gentleman spoke of destroying pulps with the galvano cautery, but I do not believe the cautery can ever be successfully employed for this pur-

pose, for in order to make a cautery we must have a platinum loop. If the two sides of the loop touch at any point you readily see that the wire will be heated to redness only a short distance beyond the points of contact. Owing to the narrowness of most root canals it would be impossible to insert a loop without causing the two sides of the wire to touch each other, thereby destroying the cautery effect at its end where it is needed.

DR. HARLAN: I was very much interested in the paper and in the opening of the discussion. I will not attempt to make any remarks on the paper, but I desire principally to touch on some of the points that have been brought out by other speakers.

Dr. McIntosh spoke about the discoloration of a tooth after the introduction of tannin. That is an impossibility. You cannot discolor a tooth by introducing a solution of tannin in glycerine, but you may discolor it by introducing a solution of tannin in carbolic acid or in some other drug.

Dr. Freeman wanted to know how to use dialyzed iron. It should be introduced into the cavity of a tooth on a piece of wood. There should be no moisture in there from the time of the application of the arsenic up to the time of the application of the dialyzed iron. It is said that the sesquioxide of iron will answer the purpose as well. Dialyzed iron should be fresh, always. One of the objects in using tannin after the destruction of the pulp is to prevent disintegration of the blood discs. That is one of the points that should not be lost sight of, because you do not wish any of the oral teeth to become discolored on account of pulp disintegration or blood disc disintegration, putrefaction or destruction. When a pellet of cotton is saturated with tannin and glycerine it is introduced into the cavity of a tooth after the destruction of the pulp with arsenic; at the same time there should be introduced an oxygenated oil, so that if gutta-percha is used as a covering the oil will prevent the ingress of water. If the dentist fails to remove any portion of the pulp and has not introduced any escharotic agent other than arsenic into the tooth, he can digest the remains of the pulp with a fresh fluid extract of common papaya. There is not the slightest doubt about it, but it must always be fresh. One of the objects, which many of the gentlemen fail to apparently appreciate in the use of tannin and glycerine in connection with the pulp of a tooth, is that it is intended to be used for the abstraction of water and to diminish the size of the pulp; it then becomes

leathery so that it does not disintegrate. Then broach may be passed along by its side and it is easily grasped. Then it may be removed.

The essayist made a slight error in the length of time which this application should remain in the tooth. I have made more than one thousand experiments with tannin and glycerine on the pulps of teeth, and find that a period not short of eight or twelve days should be allowed to elapse before the removal of the pulp, because then it can be much more easily and thoroughly removed entire than at any other period.

One other point with reference to the failure of capping pulps. One of the reasons why pulps die after they are capped, when a thin layer of dentine lies between the pulp capping and the pulp itself, is because that layer of infected dentine is not sterilized; it is because they use alcohol, carbolic acid, creosote, and many other things, the use of which is not fully understood by dentists who will not study the subject. It is introduced there, and they cover up the anærobic pathogenic bacteria, which will go on and in time infect the pulp and it will die.

DR. A. W. FREEMAN: Sometimes these pulps are in large cavities beneath the gum margin, and we want to keep them dry. How shall we do it? My own practice is to excavate as thoroughly as I can, and put in a temporary filling of amalgam extending above the gum line. Then, after having pacified the pulp somewhat, I can send my patient away. At the next sitting I make my application and keep it dry. That is an important consideration, and I think the paper is very valuable in that it contains interesting items which are worthy of our consideration.

In regard to exposed pulps. I heard a gentleman of this Society say at one time that he had actually seen the dentine of a tooth bleed. Well what kind of a tooth was it? It was a bicuspid. Within less than a year after that I was excavating a tooth carefully up near to the enamel in one of the first lower bicuspids where the tooth was very small and more like a cuspid on the outside than a bicuspid. Right up under that portion I exposed a small nerve. I capped it, and the patient was under my observation for three years afterward; what became of him then I do not know. This was in a case where the teeth were in a soft condition—those conditions that we all dread to see—though they were handsome teeth, and had the appearance of a good solid structure. The patient was only

eighteen years of age. Sometimes we do find a pulp almost exposed in patients that have not very solid dentine. What shall we do with them? I will tell you what I have done in a few cases. I cover with a solution of chloro-balsam after having excavated the softened dentine as much as I dare to, lest I should come on the pulp. You can see a change of color before you reach the pulp. After I have prepared the tooth carefully, having disinfected it, I put this chloro-balsam on a little piece of paper and introduce it, placing a little chloro-percha over it. Sometimes I use the chloro-balsam without the paper.

I believe in oxyphosphate to a certain extent, yet it seems to me that more pulps are killed from the use of oxyphosphate than from any other preparation that we use. I do not believe it is fit to be put into a root canal; I think it has a tendency to soften the dentine around it. Of course you want to use your eyes in these matters. I have recently taken out fillings from the roots of such teeth where the dentine was considerably softened and where the teeth otherwise were in good condition.

Puncturing of the pulp which has been spoken of is an important point. Sometimes it is a good idea to puncture the pulp and send your patient away for two or three days before making the application. Suppose you cannot do this or put on the dam, what will you do then? Perhaps a young mother comes to your office who can stay but a short time and may not be able to return as you might desire.

Dr. Harlan says he would let her go and have her return. Dr. Harlan's theory is very good, but we cannot always carry it out in practice. For my part, I take out the decay, puncture the pulp, apply arsenic, and then give my patients a small bottle of dialyzed iron to take home and instruct them to make one or two applications after removing the arsenical application; and if they follow your instructions the result of the subsequent operation may be good, but put on your dam whenever you can.

DR. KEITH, of St. Louis: Whenever the subject of pulp-capping is discussed one of the three materials is said to be used—oxyphosphate, oxychloride of zinc, or gutta-percha. When the details are mentioned, we find that either copal-ether varnish or something else has been interposed between the material used, and the pulp. I desire to call attention to an old quotation, "That the noblest work of God is man" What is next? Woman? No.

The shirt that covers him. What is next to the pulp? What do you put next to the pulp? That is what I want to know.

A MEMBER: Dr. Stevens mentioned the fact that he has never seen a living pulp capped. It think I have seen it. I do not think there is any one here who has practiced dentistry for several years, who has not seen cases of this kind. They come to us rather unexpectedly sometimes, and more particularly is this the case with children. In excavating, we will sometimes uncover the pulp. I have had quite a number of these cases come under my care, but I do not have any more of them than I can help: I immediately rinse the cavity or syringe it out with hot water, dry it, place over it a thin coating of oxyphosphate just as thin as I can flow it. After that is perfectly hard I put in the filling, whatever I may choose to use. These fillings I have had occasion to examine afterward; I have put in temporary fillings in several instances, and in removing them I find under the capping that the pulp has been completely covered so as to preclude the possibility of any external irritation, such as thermal changes, and the pulp is perfectly capped by nature. I give it a chance to cap itself.

DR. SILL: Dr. Harlan expressed the belief that in the capping of pulps, that its death is often due to the want of sterilization of the dentine over the pulp, which I think is possibly the case in many instances. I would like him to explain his mode of capping pulps, previous treatment, etc.

DR. HARLAN: The subject under discussion, strictly speaking, is how to deal with condemned pulps, but the essayist diverted to the previous history of pulp capping, and that is the reason I had something to say about it. The pulp of a tooth under the circumstances mentioned by me is not uncovered. I said one of the reasons why pulps die under pulp capping when there was a layer of infected dentine between the capping and the pulp, was on account of the enclosing of anærobic, pathogenic microbes by the use of coagulating agents, which microbes, still living, went on further infecting the dentine, and dissolving it, and infecting the pulp which finally died. Now, the gentleman wants to know how I cap a pulp. I sterilize the cavity in a tooth without the use of coagulating agents, and I sterilize the infected dentine overlying the pulp of the tooth with myrtol, which is a diffusible oxygen carrying oil that is not very unpleasant to taste, that has a greater portion of the stearoptenes in its composition than some of

the other essential oils, and hence is of greater value as a disinfecting agent. By applying this to the infected dentine which has previously been dried by first washing with a solution of sodium fluosilicate, a solution of bichloride, a solution of glycerine, or of boracic acid, then drying it so that the oil will be able to diffuse itself and destroy any septic or poisonous matter there, leaving it in for a sufficient length of time to accomplish that object before the capping is introduced; that time will not be less than three days, and possibly it will take a greater number of days. When the capping is introduced it is done as follows: The rubber dam is adjusted over the tooth before the dressing is removed, so that no saliva, dirt, or mucus, or food gets in there, and a heated instrument is introduced into the gutta-percha so that there is no possibility of carrying infection into the cavity by means of an instrument. The cavity is thoroughly dried and it is varnished with copal-ether varnish, and that is the point that Dr. Keith wanted to have answered, whether to cover the body or pulp. You want to know what I do, I presume. I put in the oxysulphate of zinc, put in a thin layer which is allowed to harden; I cover it with the oxyphosphate which is harder and let it fill the whole cavity for the time being. Before the patient is dismissed, the surface of the oxyphosphate is varnished, and the varnish is allowed to dry, and then the rubber dam is taken off. That is my method of capping a pulp when it is ready to be capped.

DR. KEITH: Where do you get your papaya?

DR. HARLAN: The fluid extract of papaya can be procured from William S. Merrill, of Cincinnati, or from any drug house that manufactures preparations from organic materials. Now, to make one addition to my previous remark—somebody wanted to know what solution of tannin and glycerine I recommended. It is a saturated solution.

DR. EAMES, of St. Louis: Is there any discoloration following the use of the essential oils?

DR. HARLAN: No. It is an impossibility, because the essential oils are absorbers of oxygen, and oxygen is the best bleacher on the face of the earth.

DR. MCINTOSH: If the solution is well sealed it is not so apt to produce discoloration. I do not believe there will be discoloration.

DR. HARLAN: But you said it was the tannin that did it. It is the fluids of the mouth that do it.

DR. BLACK: If decomposition occurs there will be discoloration.

DR. DORN: I will ask Dr. Harlan when he considers a pulp condemned? Under what conditions?

DR. HARLAN: I think the essayist ought to answer that question. I condemn the pulp of a tooth to destruction if it is in the mouth of a person beyond middle age, and it is totally exposed, or any portion of its surface lost, or it is suppurating, or if it has a fungous growth on it, or anything of that sort. I try to save the pulps of teeth in the young, even though I feel I may be unsuccessful.

DR. DORN: You talk about arsenic and then applying the tannin and glycerine—do you ever attempt to remove the nerve after applying the arsenic? How long do you leave the arsenic in the cavity?

DR. HARLAN: I have practiced in one city for more than twenty years, and for several years after I began to practice I applied arsenic to the pulps of teeth, covered it up with sandarac varnish, let the patient come back the next or second day, took out the sandarac, etc., and proceed to wash the cavity with water, and then allow the patient to go with cotton soaked in carbolic acid or creosote. Perhaps the next day the patient came, and I could remove the pulp; it would be a painful procedure unless the pulp was in a state of decomposition when the arsenic was applied. That was the prevalent mode of practice in some instances; I discovered it was bad practice, and so I abandoned it. I find that if you apply arsenic to the pulp of the tooth on Monday at 12 o'clock, and the patient returns on Tuesday at 12 o'clock, in ninety per cent of the cases you cannot remove the pulp without producing pain unless you practice the method advocated by Dr. Johnson. If you get it dry perhaps you can remove the pulp with little or no pain, but the removal of the pulp of the tooth should not be attempted when it will cause great pain, or there will be much bleeding following its removal. Hæmorrhage in a pulpless tooth is hard to get rid of, especially in the minuter canals, and hence the greater probability of blood disintegration and discoloration of such teeth. So I prefer the method for the retention of nearly the normal color of the tooth of the process that I have outlined as having been read at the Boston dental meeting.

A MEMBER: Supposing a patient comes into your office with a proximal cavity, with no decay until after the patient has bitten on it and crushes it in, and then has pain in the tooth, how would you proceed with such a case as that?

DR. HARLAN: I would arrest the pain without the use of a coagulating agent and wait until I could have time to properly examine the tooth.

DR. TEMPLETON: Dr. Harlan will pardon me for asking him another question. I wish to know, before condemning a pulp, what importance he attaches to the temperament of a patient. For instance, we may have a young patient with a marked lymphatic temperament. What weight has that before condemning the pulp?

DR. HARLAN: I do not think I would apply temperament very much in determining with reference to the possibility of saving the pulp of a tooth. If the case was that of a rickety child—one that was feeble, pale and anæmic, I might decide that the best thing to do would be to destroy the pulp; but in speaking of the destruction of the pulp or the condemning of the pulp of a tooth, I take it as a foregone conclusion that the members of this Society will understand that you would not try to save a pulp for a young person who was suffering from phthisis pulmonalis or some other disease which was certain to carry them off in a short time, because it would be useless; so that I would use the same discrimination in trying to select the cases that I would in trying to select cases for filling.

DR. W. B. AMES.—I just want to say a word in regard to the time usually allowed to elapse before attempting to extract pulps after devitalization. From my own experience, which has not been so extensive as a great many, of course, but yet extensive enough to form conclusions of my own in this respect, I have adopted the practice of almost universally telling the patient after I have applied a devitalizing agent to a pulp from which we get hæmorrhage for instance,—the pulp not partially decomposed—I tell them that I do not expect to extract the pulp inside of two weeks, and my time of leaving these pulps is from two to five weeks, or longer, before extracting them. I keep the cavity thoroughly sealed with some embalming agent; I do not use tannin; I use antiseptic dressings. While I think the oil of cassia is very useful, I have not given up iodoform. I use the two agents in combination in the form of a paste, and this I keep tightly sealed in.

If after two weeks or more, I find upon removal of the temporary filling of gutta-percha, that there has not been a slough, I seal it up again and wait for the slough to take place. As long as there is pain from the attempt to remove the pulp, the slough has not occurred, and there will be hæmorrhage if it is torn away; which should be avoided. In favorable accessible cases, if left till the slough takes place, the pulp of an upper molar can be picked out with the tweezers, the bulbous portion and three branches, coming out entire. This is, of course, only possible in the most favorable cases, but I derive benefit in all cases, by allowing sufficient time to get the slough and absence of hæmorrhage.

DR. J. E. HINKINS:—I think more violence is caused by not thoroughly removing the pulp of a tooth than any other operation in the filling of dead teeth. I have examined the roots of hundreds of teeth supposed to have been filled. I find at the end of the root in many cases there is no filling at all in a large per cent. I procured several hundred specimens of teeth from Dr. Slonaker and hope to be able to carry my examinations farther in this respect.

I would like to ask Dr. Harlan whether dialyzed iron is used to allay pain or for its chemical action?

DR. HARLAN:—Dialyzed iron is used on account of its antidotal properties to any excess of arsenic.

DR. HARPER, of St. Louis: I wish to call the attention of the Society to a method for removing the pulps of teeth by the use of crystals of cocaine. Take a drop of oil of cloves and add enough cocaine to that to make a thick paste and introduce it into the pulp after having first put the rubber dam on the tooth; then by taking a broach, slowly work it down; with a bur open up the opening slowly, and in ten or fifteen minutes you can remove the pulp from any of the anterior teeth. Where arsenic has been applied to the pulp and the patient returns with pain, I find we can get better satisfaction from the application of cocaine.

DR. MORRISON, of St. Louis, Mo: I want to add a few words to what has already been said upon this subject, and to speak more particularly of oxychloride as a capping. It was my misfortune in 1861, to have a bicuspid exposed upon its distal surface in its excavation. The dentist in charge of the case decided that I had better have the tooth extracted, as the pulp was badly exposed, that it was impossible to put a filling of any kind upon it, that if the pulp was removed the tooth would be destroyed and lost in a very short

time, and that I had better submit to its extraction immediately. I called a halt on that.

A year or two before that, Dr. Atkinson, of New York, recommended the capping of exposed pulps with oxychloride of zinc. The excavation of the tooth was a painful proceeding, but after a consultation it was decided to cap it with oxychloride. I sat under the operation and did not have much to say, but wanted to have the tooth preserved if it could be done. They made a paste of the oxychloride after, I think, making a dressing of old fashioned German wood creosote and applying it to the cavity. The oxychloride capping was applied, and it was one of the most intensely painful operations I ever experienced. I nearly turned a summersault out of the chair and came very near going out through the window. A little while after that a gold filling was made over the oxychloride capping, and that filling I wore for eight or nine years, and that tooth has always been sensitive to thermal changes. Eight or nine years after I had it refilled with gold, the dentist, who performed the operation, instead of making a good contour filling, made a flat filling, and there was obstruction to cleansing or cleaning the tooth with a toothpick at cervical space. I had that gold filling removed and another one put in its place. This work was done so thoroughly that a fracture occurred in packing the filling in, and the tooth was sensitive for more than two years. After that every time I closed my teeth I felt there was something wrong with it. Nearly every dentist whom I could interest in the matter examined it, and I got the opinion of each one. It was pronounced all right, at the same time I knew there was something wrong. One evening while eating some oranges the inside cusp of the tooth came away, leaving it much more comfortable. I had the remaining external cusp ground shorter, and I am now wearing a metal shell over the tooth. It was capped thirty years ago; it was then condemned and said to be beyond all hope of preservation; it is alive to-day; it is not so sensitive to thermal changes, because there is such a large metal coat over it.

A MEMBER: Are you positive, Dr. Morrison, that the pulp was exposed?

DR. MORRISON: I do not say this of my own knowledge by vision, but the dentist who had charge of the matter was a man of whose competency and integrity I have not the slightest doubt. They said it was exposed enough to bleed, and did bleed.

While I am on the floor I would like to say a word in regard to condemned pulps, their removal, etc. For a long time there has been a routine practice carried out which has become the beaten track of the profession throughout the country. I take a shorter route. I am one of the old style operators. In such cases I make an application to the pulp to be destroyed, and I tell my patient that I want him to have a little heroism about him, that I am going to give him more or less pain, that I cannot work upon exposed pulps, or pulps that I am to destroy without producing pain. I make an application of arsenic, allow it to remain a day or two, as the case may demand, and then, when they come back I get a good opening to the pulp chamber, as nearly straight and direct an opening as possible. I do not care so much for the use of the rubber dam, and do not fear microbes and the contaminating influences of saliva as much as has been stated, and I will open it thoroughly and make it more of a mechanical operation than a chemical one, and I think I am able to accomplish what has been done by the other gentlemen by a much more circuitous route. I use small rather than large instruments, a large steel instrument in the canal produces too much mechanical pressure and pain. After drying the canal and the old pulp tissue as well as I can with bibulous paper and cones, until the pulp has been depleted and dried as much as possible, I carry a small instrument slowly to the foramen and then with the slightest rotation after the method recommended by Dr. Taft accomplish the excision of the pulp at the foramen. After that you remove the whole of the pulp tissue there and if your broaches are small enough you can remove the whole of the tissue at that sitting. I preserve every particle of the shreds of pulp I remove, and lay it aside on the porcelain slab. When I am certain that I have the remnants altogether, the canal is ready to receive the filling, and the sooner done the better.

With regard to filling the canal, I do that with gold wire. I must say I do not care particularly whether I have a hæmorrhage there or not; it is not an infrequent thing for me to fill a root canal right through the blood with a piece of gold wire, drive it up there thoroughly, then I wash out, cleanse and dry the remaining portion of canal, and fill it with oxychloride of zinc, with asbestos or mineral wool to pack it, which I think are the best things we have to fill the chambers with.

DR. MCINTOSH: I would like to mention a formula which relieves pain in eight cases out of ten. It is as follows:

Arsenic (in fine powder),	four parts.
Cocaine hydrochlorate,	four parts.
Menthol,	one part.

Glycerine (sufficient to make a stiff paste, applied as arsenic is applied.

I may say with this formula two-thirds of my cases are comparatively free from pain.

DR. STEVENS: According to what Dr. Morrison has said, if I am right in my diagnosis, and the description he gave of his own tooth, I should say that the tooth was dead, for a tooth that is not subject or influenced by thermal changes is dead.

THE PREPARATION OF TEETH FOR FILLING.

BY EDMUND NOYES, D. D. S., CHICAGO, ILL.

An apology would be appropriate for writing a paper upon so trite a subject without having something original to say, if it were not desirable for the best of us to review somewhat carefully and at frequent intervals the fundamental principles, theories and modes of procedure which govern our commonest routine operations. It is more important in this case because we all so frequently observe instances in which serious mistakes have been made, and probably nearly all of us find occasional cases in which we wish that we had made certain operations in a different manner.

If you are expecting me to go over the whole field included in my title, thoroughly, so as to leave you no opportunity in the discussion except to give your own variations upon something I have said, or "The paper has covered the ground very fully," and similar remarks to show that your minds are running so strongly in the channels set for them by the essay that they do not readily get out of them to give us your knowledge and experience upon many other points concerning which we desire to hear from you. Please to remember how many interesting articles, each of them as long as this paper ought to be, have appeared in the *Cosmos* of the present year upon "The management of the enamel margins." These show so well what the exhaustive treatment of one part of the subject requires that you will only expect me to touch lightly, here and there, some of the more important matters. I shall leave

out, also, the whole subject of "treatment" of pulp chambers and root canals and their contents, believing that the desire in reference to this paper is that it should relate chiefly to the mechanical procedures of operative dentistry.

The simplest cavities, on the whole, are those of the grinding surfaces of bicuspid and molars, the buccal or lingual pits and grooves in the latter, and the pits upon the lingual faces of upper incisors. The most of the errors and failures that we see in these appear to arise from thinking them too easy, and therefore spending too little time and trouble for their proper cutting out and shaping, (and often too little care in packing the filling material into undercuts and against walls on buccal and mesial sides of those in molars of the right side in the lower jaw, and the lingual and mesial portions in those of the left side).

Fissures or grooves of enamel—bicuspid and molars, if they show no indications of decay, may safely be left alone till they do, but if decay appears at any point then the fissure seams must be carefully cut to the end, and grooves to a good finishing point extending the cavities often far into sound material for the prevention of decay, not always because the grooves are sure to decay, but because it is not practicable to finish the margin of a filling down into the bottom of a groove or sulcus so as to prevent the probability of decay in the bottom, next the margin of the filling. These extensions into sound territory are often cut too shallow and without any retaining shape so that a portion of the filling comes out after awhile, and I have observed that this is more likely to happen if engine work is depended upon exclusively. If the enamel is cut though it is easy to undercut the dentine for the retention of the filling (it needs but very little), but if the enamel is not quite penetrated a hand bur (inverted cone) or square drill, will more sharply define the bottom of the cut so as to insure parallel or slightly undercut sides, than can readily be done with the engine as often used.

If these cavities are large, having made considerable progress in the dentine, secondary decay of the enamel, the decay in the under surface of the overhanging enamel always requires attention. Of course the overhang should be for the most part cut away, but it is usually unnecessary to remove it wholly unless destruction has been so great as to make it needful to sacrifice the marginal angle of the grinding surface.

When sound dentine has been reached all round the sides, and the overhanging enamel cut away till the remainder is undoubtedly strong, the slight remaining overhang should be trimmed on its under side till the disintegrated portions are all removed, and then slightly countersunk at the outer margin so that the enamel rods unsupported by dentine will be covered by the outer portions of filling, and less overhanging should be allowed because the material does not retain a filling when the decay is removed and the margins trimmed. It is only occasionally necessary to do anything further for the purpose of retaining without movement the first portions of gold. If the marginal angle of the grinding surface has to be broken down at any point the magnitude of the operation is at once greatly increased for it becomes necessary to build up an exposed contour.

Labial and buccal cavities need not be described in detail except to say that it is often wise to cut them somewhat into sound material along the lines of their progressive extension. There is an exception to this in the somewhat occasional numerous cases in which it is apparant that the tendency to the surface extension of cavities, or the begining of new ones has ceased; then we may simply cut till sound margins are reached and have reason to hope that carefully made operations will prove permanent.

Whenever proximal cavities are to be filled, the first step in preparation is a sufficient separation of the teeth to give access and opportunity for the preparation of the cavities, the perfect introduction of the fillings and especially for their proper shaping and finishing. This opens the whole series of questions about "contour" fillings or flat ones, the restoration of masticating surfaces, and the preservation of the normal interproximate spaces, the latter of which is probably much the most important of them all, but these questions I do not intend to discuss except to assume that nature's ideal tooth form is a good one, and that when we change the forms of teeth from what they originally were, it is better, if we can, to change them toward an ideally perfect form than away from it. This of course implies, what it is useless to deny, that nature sometimes falls short of perfection in the forms of teeth as well as in the proportions and structural organization of other bodily members. The necessity for this previous separation is apparant enough if the cavities are small and the grinding surface angles so strong as to make it advisable not to cut through them, but the need is

often greater in the case of extensive decay, with walls so much broken down as to offer easy access to all parts of both cavities. In these cases, if the arch is full, there has usually been so much crowding together since the loss of the supporting proximal walls that the space between the teeth at their necks is reduced to one-half or two-thirds, and it becomes desirable to separate them enough to compensate this crowding together, and beyond that, enough for the packing and finishing of the fully restored contours, I mean fully restored as regards anterior posterior thickness at points of proximate contact. This may often be done when the weakness of remaining walls does not admit of anything like full restoration of the masticating surface.

The separation of teeth in the manner and for the purpose described, is so disagreeable and inconvenient a necessity that a large proportion of the profession appear to shirk it, or to get along with a very insufficient amount of it and we continually see the results in faulty operations or mutilated teeth. How then shall separation be accomplished? Many rely chiefly upon the immediate action of the various forms of separators, and there are many instances in which they will readily move teeth sufficiently, and others in which they will do so enough to possibly answer, but in average cases it has seemed to me unsafe to put force enough upon teeth by such means to gain space sufficient to do work with satisfactory perfection without unreasonably prolonging the time required. Other objections to the separators are that the framework and the points between the teeth are often greatly in the way. Slow wedging usually proves most satisfactory, and the greater perfection and usefulness of the operations made possible by it abundantly compensate the patient for enduring it, and the operator for insisting upon it. It may be done with rubber in various forms and thicknesses, with waxed tape, sometimes with cotton, often with wood. The theory, by whatever means it may be carried out, is to move the teeth as forcibly and as rapidly as consistent with reasonable endurance, and retain the space gained until the resulting soreness has disappeared. The time will vary from five days to three weeks.

We are obliged to resort to all these materials, and submit to considerable variations of time required, in occasional instances, but it is desirable, in respect to anything we are doing so constantly, to have a routine practice which meets average requirements and

will answer in as large a proportion of cases as possible. My own experience has gradually settled upon a routine about as follows : Strips of proper width are cut from extra heavy rubber bands (one thickness of which will usually make sufficient space), and placed between the teeth, giving the patients very careful instructions in regard to keeping it away from the gum by slipping into the interproximate space, and allowing its removal for a few hours only in case the pressure becomes unreasonably severe, making appointment for the filling one week from the time the rubber is first inserted. This is not an ideal method, but has proved a practical one. It can be made less severe by taking longer time, but most patients prefer to endure what they can reasonably, and get through in a week rather than be annoyed with it ten days or two weeks.

If patients were accessible enough it would be better to begin with a tape, a double thickness of rubber-dam, or a thinner band ; but patients will not remember and manage well so many different articles. What they do for themselves must be arranged with as few and simple details as possible. I cannot always succeed the first time with a new patient, but when they find the operation has to be postponed, they will usually follow instructions the second time. It is easy to make them understand the necessity and usefulness of it so clearly that most of them will submit to it willingly. The space gained by a week or more of slow wedging must be fully maintained or increased during the operation. The separator may often answer well for this purpose, but it seems to me difficult to find anything else so good as an orange-wood wedge. The gum should be painted with 10 per cent cocaine, and the wood crowded well beyond the margin of the cavity. It may be made very thin if necessary, and curved as much as the firmness of the gum festoons, or the extent of decay may require. If driven firmly the support given to the teeth, and possibly the benumbing effect upon the pulp by the strain upon the nerves at the apex of the root, will diminish the pain of the operation enough to compensate the pain of applying it, while the ready access and perfect vision secured by it are of the very highest importance to the perfection of the work.

It is true that a wooden wedge has a disagreeable propensity to become displaced and to slip out of its position during the operation, especially in those parts of it which tend to move the teeth, like using corundum strips, and whenever the pressure upon the teeth is great enough to relieve the strain upon the wedge. Of

course the more firmly it is practicable to drive it the less trouble of this sort there will be.

Whenever making proximate operations, the preservation of the gum is always an important consideration, and the process of slow wedging requires careful attention to avoid pressure upon it severe or long continued enough to destroy it, but the successful accomplishment of sufficient separation renders its preservation easier. Getting the gum out of the way of the operation is even more important than its preservation. Being a soft and elastic tissue it will stand a good deal of crowding and the additional room gained by wedging makes it practicable to flatten it down toward the alveolus, under the pressure of the wedge, so as to expose the cervical border of almost any cavity and as much more as it is often necessary to extend the cutting.

After the access and opportunity have been secured in the thorough manner described, the removal of decay, shaping the cavities and arranging for retention of the filling are an easier task than they otherwise would be, though still requiring experienced judgment and skillful care. The errors of leaving too weak overhanging enamel, and making too deep retaining grooves too near the enamel, have been often preached against and are still often repeated. Extension for prevention ought to be done more frequently and to a greater extent than has been the habit with many of us. It should always be remembered that the farther toward the buccal and lingual angles proximal fillings extend the less likely they are to fail at those boundaries. The same must be said of extensions toward the grinding surfaces, but the grinding surface angle must be left strong (and have some dentine under it), or be cut through entirely. This subject (extension for prevention) has been so fully discussed in the articles before referred to, by one of our number, that I do not wish to enter into it very fully. It is fortunately not often necessary to carry that plan to its extreme logical fulfillment, by the removal of the entire proximal surface and covering it with the filling. The apparant slowness of decay, the diminishing liabilities to it that often comes with increasing age, the improved opportunity for cleansing which can sometimes be obtained by care in making the operation and the increased and more intelligent attention to cleanliness that we can sometimes induce in patients after operations have been performed, all tend, in varying degree, to mitigate that necessity. There is another

reason for refraining from much extension for prevention in case of some very young patients in their lack of endurance, for prolonged operations and the extreme sensitiveness which makes it impossible to do extensive cutting without unbearable torture. It is better to run the risk of repeating the operations a few years later.

The conclusion has doubtless become apparent to you by this time that dogmatic, accurate and inflexible rules cannot be laid down to govern these procedures, that a man can never safely leave behind him his common sense and good judgment, and that a few years of experience and observation is likely to be of some value.

DISCUSSION.

DR. GEO. H. CUSHING: Mr. President. The subject of the preparation of cavities is a timely one. The suggestions that have been made in the paper are such as we need to have our attention called to occasionally, notwithstanding they are thought to be so well understood and so fully discussed. But the experience of every careful observer shows that it is necessary that we should revert to these things, and perhaps we should do so more frequently than we do.

The paper deals mainly with the necessity for, and the methods of, separation of teeth for the preparation of proximal cavities. I think that very many of our profession, not among the younger members only, but among the older ones, do not fully realize the importance of this subject, judging from what we see constantly coming before our eyes; it lies at the foundation of success, the proper and sufficient separation of teeth that are to be treated on their proximal surfaces. Without such separation we cannot make perfect operations, if we can at any time, and the attempt is too frequently made to perform operations without sufficient space. This is a most prolific source of failure in that class of cavities.

One class of cases that the paper referred to require special care and attention, and it is that class that have lost more or less of their proximal surfaces by decay, so that the teeth have come together at the crown or cutting ends. In these cases a greater amount of separation is necessary than simply to get space enough to make a filling; more space is needed for the reason stated in the paper; that is, to secure the restoration or preservation of the proximal space at the necks of the teeth, which Dr. Black has so forcibly told us about in some of his recent papers.

With respect to the method of getting space, I do not quite agree with the essayist as to the best method. I do not like the use of rubber. It induces more soreness about the tooth than is desirable, and in my own practice I can do away with that very largely by the use of wood. The use of rubber if in the hands of the dentist continually, may be made almost as painless as that of wood, although not quite so, but if you trust to your patient altogether to do the wedging you will be apt to have more soreness than there is occasion for. As a rule, I can control my patients so that they will come to me often enough to get wedges placed as frequently as necessary, so as to avoid entirely any soreness of the teeth. There are cases, of course, in which we must wedge more rapidly than we would like to, and we must get along with rapid wedging and the increased amount of soreness caused by it. I have never been favorably impressed with the separators that are in use for rapid wedging. I think we shall see by and by the evil results of the too frequent use of these separators for forcing the teeth apart to the extent necessary. In some mouths it will eventually result, I think, in death of the pulps of the teeth; the formation of nodules in the pulps and troubles of that kind. While it seems all right theoretically, I am opposed to it practically. I have never been able to use them to advantage. One of the objections made by the essayist was that they were in the way in some cases; they are very much in the way I think, and interfere greatly with the successful manipulations of the operator. In very many cases they do not give space enough, and I defy any man to secure space enough between the molars and between the molars and bicuspid in some mouths, to successfully fill many of the cavities that are presented to us for treatment; so that I should not advise their use except in rare cases where the teeth move easily, as we know they sometimes do; then they may be used with greater safety and space enough be secured by their use to enable you to operate directly.

The essayist spoke of the natural forms of the teeth, and that nature generally knew what she was about and made them as they ought to be. We will find that true in a great measure, but sometimes she does not. I think that one of the typical forms of the teeth where the proximal surfaces are nearly parallel, touching out their entire surfaces, is not the ideal form, and is one that we should endeavor to correct, and in such cases we must have space

enough, not only to be able to make a perfect operation, but we should be able to leave a contour that is most desirable for the future protection of the teeth.

As to the method of preparation of cavities, the paper has covered the ground so thoroughly that it is hardly necessary for me to dwell on the subject at length. We cannot in so brief a space of time attempt to go into all of the details of the preparation of the various cavities. I do not propose to go further into the subject than to refer to the preparation of the cavities with regard to beveling the enamel edges. I wish to merely illustrate by a model I have brought with me, a point that may strike some of you more forcibly than any description could do as to why the enamel margins should be beveled.

This is a crude section of a molar illustrating the line of enamel rods. They point in a general way toward the central point of the pulp itself, so that from any point that we are cutting the enamel rods point from that portion of the surface of a tooth toward the central point in the pulp. If on some points of the surface we cut directly at right angles with the point of attack we cut off the inner ends of the enamel rods, and they are then unsupported by dentine and will eventually drop out. I think it will be quite obvious to you how improper it would be to cut at right angles here (illustrating) and so cut off the inner ends of these rods.

DR. J. G. REID: I would like to say a word with regard to mechanical appliances for immediate separation. If you undertake to separate the teeth quickly with this appliance, there is great danger in fracturing at the cervical margin of the tooth. I believe that a great deal of trouble and subsequent decay arises from the undue pressure that is brought to bear in separating the teeth, causing fracture or checking, of the small amount of enamel that is left at that particular point; for this reason I should be particularly cautious in using these appliances. I am convinced they are dangerous instruments unless used in careful hands. I prefer to take time in separating, and I use gutta-percha principally. I think it makes the nicest wedge I can possibly use. I take several days to separate the teeth, but I believe gutta-percha makes a more satisfactory wedge for obtaining space than anything I can use in the mouth; by changing it two or three times ample space can be obtained for the easy introduction of a filling.

DR. BLACK: How do you put it in?

DR. REID: I dry the tooth as well as I can; I do not always apply the rubber dam, sometimes I do, and then tear the dam away from under the rubber. After drying the surface I warm the gutta-percha until it is very sticky, I separate the central incisors, by placing my fingers like this (illustrating) under the walls of the cavity and force the gutta-percha between, using my fingers as a matrix to prevent the gutta-percha from passing through the surface; I wedge tightly as it cools, by doing this I obtain considerable space at that immediate sitting and am able to retain the space; the next time I introduce gutta-percha I do the same thing, and so on until the required space is secured.

DR. I. A. FREEMAN: In regard to the subject under discussion I fully agree with Dr. Cushing in the plan and principle involved in the preparation of a cavity of this nature, that the force exerted upon this filling tends to carry it out toward the gums is true, and we should ever keep this in mind, but while we should have a clear idea upon this point, I would suggest that a somewhat different form be given to the cervical wall, as for instance, instead of cutting square across, I would so form this portion as not to have any square angles or points, but would carry the cavity farther toward the gum line at the middle of the cervical wall, giving it more of a curve. Dr. Jack, I think, advises this form, and also that of removing this portion of enamel entirely in some cases, for when force is applied in the consolidating of material, this portion is liable to become fractured if not forced off entirely, in which case an imperfect filling at this point would be the result; further there are other natural conditions that may be taken advantage of, for instance, we have two plates of enamel, the exterior or labial plate is convex upon its labial or external surface and is concave upon its opposite or internal surface, the enamel retreating from the lateral border somewhat, and correspondingly the dentine is deeper or thicker in proportion to the concavity of this surface and a groove may be made along this border almost from cervix to cutting edge, then with a groove cut within the tuberosity of the tooth to a depth to suit the case we have a plan that will aid very greatly in retaining the filling. I would not think it wise to sink a pit in the direction suggested when this groove can be had.

DR. C. N. JOHNSON: I do not want to have this subject passed without further discussion. It is an interesting one. There need be no apology for presenting such a subject before a society, for

although it has often been discussed, yet when we look at the mouths of our patients and see the mistakes that are sometimes made in the operations, we feel that these points cannot be repeated too often.

One place in the paper the doctor spoke about the necessity for drilling out fissures or grooves to the end. That is not always done to the extent it should be. Sometimes we see fillings where fissures well defined have been left, especially in the grinding surfaces of molars. This is often due to the fact that in many cases it is tedious work to drill them out thoroughly. I have found that by using a certain form of drill, I can open them up readily. I simply take an inverted cone bur, such as we get from the manufacturers, one of the small sizes, and after it is worn down so that the blades are short, I simply grind the bur off on two sides, toward the cutting edge, in this way (illustrating), forming a sharp drill such as you see on the board. This kind of drill will walk right through a fissure between the plates of enamel every time.

As to the matter of inserting contour fillings in central incisors. The question raised this afternoon was with reference to gaining anchorage near the cutting edge. Objection was made to carrying a groove over the end of the tooth on account of the thin plates of enamel. It will not weaken the walls perceptibly if the groove is carefully drilled and the margins beveled and protected with gold, but in cases where the enamel plates are extremely thin and we cannot get a sufficient bulk of gold, I cut away the lingual wall enough to give strength to the filling at this point. The labial wall is left for the sake of appearance.

As to the use of separators, there is a class of cavities where it is almost impossible to use them with safety. This is where the cavity extends high up on the neck of the tooth. If you use a separator on a tooth decayed in this way the jaws of the appliance will check the enamel in almost every case. I think where the cavity does not come high, where there is no danger of checking the enamel, and where care is used in its adjustment, we can in many cases safely gain space with a separator. I have not been so fearful of causing death of the pulp, as I have of injuring the enamel.

Another point in the preparation of cavities for filling teeth. We often find faulty preparation of proximal cavities in molars and bicuspid where they come to the grinding surfaces. They are left too narrow at the opening. The enamel should ordinarily be

cut well back toward the cusps at the angle between the proximal and grinding surfaces. We thus avoid leaving a sharp edge of enamel which will eventually be broken down by mastication, and we provide better access to the cavity. The enamel can be trimmed away quickly and accurately with sand paper disks and though I was criticised for advocating them at one of our previous meetings, yet I have found nothing that will answer so well in my hands. I can give the edge any shape I wish with them and make the outline symmetrical and true. Of course they will not do for the cervical margin—I refer to that part of the cavity approaching the grinding surface.

DR. HARLAN: One of the best forms of enamel cutters or fissure drills, is manufactured by the firm of Ash & Sons, of London. The fact is that the cutting edges along the surfaces are both transverse and longitudinal, and each one of these little squares, the points, are perfectly sharp and come to a pointed apex, and in the extreme point of the fissure drill it is hollow, so that when it passes into the fissure you will have no difficulty whatever. It is tempered so that it will cut enamel; and the drills are made in six different forms, I have used them all, and have never found anything yet that would quite equal them in cutting capacity. They can be procured from Ash & Sons, New York.

DR. TEMPLETON: I obtained quite a number of these drills last November and have never found anything that will cut in comparison with them. They are serrated longitudinally and transversely, making a perfect pyramid, sharply pointed. They will cut enamel very readily and easily. Mr. Hodge does not make an instrument that will compare with it.

DR. SITHERWOOD: I will simply state that I looked through several dental depots or supply houses while in Europe last summer, and I have found no instrument equal to the small drill made by Ash & Sons, of London. It will cut enamel superior to anything I have tried.

DR. CASE: I have a suggestion to make in regard to the ordinary fissure drill. When it is worn considerably, if you will grind off the end diagonally, on an oil stone, giving it a curve as you see here represented, little spurs will stand up along the edge of the ground surface at a very sharp acute angle. For entering a fissure or extending it by drawing the rotating end back and forth over

the edge of enamel it will be found very effective. It has been very satisfactory to me, and it is very easily sharpened.

DR. GILMER: While we are on this subject I wish to show you something else. I take ordinary round or inverted cone burs and grind them flat on the end, then grind them in the shape which you see here. I also make from the round and fissure burs an instrument in this shape in either case with three cutting edges only, they are made absolutely hard without drawing the temper; heat them red hot and drop them into water, after which when sharpened they will cut enamel readily.

DR. BLAIR: Do you do this grinding in the laboratory?

DR. GILMER: I do.

DR. BLACK: I want to say a few words in regard to polishing margins of cavities with discs. Dr. Johnson may do this very nicely, but he may have unintentionally conveyed a wrong impression to some of the members by speaking of rounding the margins. I will ask you to stop and think what rounding margins means. If we polish the margins with anything that is soft, with any form of polishing powder used upon soft material, upon wood, rubber, or what not, we will round the margin. Suppose I have a cavity in a central incisor. There is my cavity say (illustrating on black-board), and instead of cutting this square with the surface of the enamel, this is the way it should be, a definite obtuse angle. If I polish it I round it over. It makes a nice thing to fill against; but when I make a section of that tooth, including the filling made against such an edge, I will find that at the margin there is a feathered edge of gold. You will form a feathered edge of gold over it if you round the marginal edge of your enamel. You should have in your mind the form which will be given to the marginal edge of your gold filling, and not thin it out to a feather edge in any case, for in the formation of a nice rounded margin to fill against you form an edge to your gold filling that is unreliable. In forming your marginal edges take a good, sharp chisel and plane them so as to make an obtuse, but definite angle of your filling, getting a proper beveled marginal edge of the enamel in each and every instance. It is just as important that the marginal edge of gold filling be right as the margin of the enamel itself. We must have them both right to get the best results. One of the difficulties in getting marginal edges of enamel in proper form is to prevent thinning out of the marginal edge of the filling material until it be-

comes unreliable. You should never polish the marginal edge of the enamel upon which you are going to place a filling with pumice stone or paper disc unless it is in position in which you can so hold it to make a definite angle; then you need to be careful about it. never polish it with pumice carried by a stick or anything of this kind, but plane it with a good sharp chisel, holding its edge parallel with the enamel rods, and the movement should be parallel with the marginal line of the cavity.

By the term marginal edge of the enamel I mean the cut edge of the enamel including its thickness. By the term enamel margin, or line of the enamel margin, I intend to convey the idea of the line forming the limits, or outline of the cavity. These two ideas should always be held distinct in the mind when discussing this subject. We form the line of the enamel margin by cutting away until the proper form is given to the outline of the filling. We form the marginal edge of the enamel by planing it to the proper bevel and smoothing it.

We have here the mesial surface of a molar tooth with the cavity reaching nearly to the gingival line (illustrating). Here we have the line of the enamel margin of the cavity, make a bevel to form the marginal edge of that line of enamel margin. The line of the enamel margin is an important matter, and the forming of the proper bevel upon the marginal edge of the enamel is also a matter of importance. This form is so important that we should be careful to make it with reference to the form of the marginal edge of the filling, as well as the marginal edge of the enamel.

DR. STEVENS: I do not understand how you can cut a groove on the side shown on the board, if I understand you correctly, and have a square edge to these rods. The rods are in this direction (illustrating), and by cutting them you make them weak.

DR. BLACK: I hardly think I conveyed the idea that I would cut a square edge. We do not want any square edges of enamel, they should be beveled. I think I said that. We do not want an acute, or square corner. For instance, here is the line of the enamel margin; this forms the thickness of the enamel, and I call it the marginal edge of the enamel. The rods run in this direction (illustrating). If this is the margin of our cavity, and that is the outer edge, the cut would be in the form which you see, beveled outward so as to cut off the outer ends of the enamel rods. Now then, while the general form or direction of the enamel rods is from

the center of the tooth outward, this will not quite do for a guide. For instance, take a bicuspid where you get this oval formed pulp chamber as represented. The enamel rods stand perpendicularly to the surface of that enamel; they do not run to the center of the tooth, but to each of the points which you see illustrated on the board, i. e. they converge toward the buccal and lingual extremities of the pulp chamber as shown in cross section. That is they are perpendicular with the outer surface of the enamel. This is the best guide, but is not always correct. They do not stand always alike in similar teeth in different persons, but it is the best guide we have. For instance, in cutting down on the proximal surface of bicuspids, in cutting off the outer ends of the enamel rods, the cavity widens out as represented; that is what we mean by beveling the marginal edge.

I spoke of the line of enamel margin. Let us take this (illustrating), although it is not a good picture of a tooth. Take this part of the cavity the proximal contact would be near the occluding angle here, but the surfaces of the two teeth would lie close together, there would be a considerable amount of surface here of near approach to contact. Now, when you form a cavity that is rounded and does not come close to the gingival line which is represented here, the rule is that you get recurrence of decay at this point, along the buccal or lingual marginal line of the filling near the gum. Even though you have made a perfect filling you get recurrence of decay. You get it a good many times when you do not make a perfect filling; but even though you have made a perfect filling you get recurrence of decay. The contact point is here and the gum covering the proximate surfaces of the teeth comes up and reaches that contact point in young persons in a normal condition. The interproximate space is filled with soft tissue, and every portion of tooth tissue that is covered by the gum septum is protected against decay; but in your operation you may have injured the gum septum, or it may have been injured in some other way so that it shrinks, and a considerable portion of the proximate surface of the tooth is exposed to the products of fermentation. Fermentation takes place between the two flat sides, hence we get a point of caries almost as soon as the shrinkage has taken place. Now, you have prepared your cavity and rounded it here in the form of these cavities after simply removing the decay, and fill. The gum shrinks down. The part is exposed by the

shrinkage of the gum, at the labial and lingual curves it approaches too near to contact to be self-cleaning and we will get recurrence of decay. I find this recurrence upon the incisors in all of those cases where there is a strong tendency to caries. Why? Because shrinkage of the gum has exposed these points to the action of the products of fermentation. Cut your cavity out toward the labial and lingual and form it in that shape (illustrating), so that it will be protected by the gum for the longest possible time. That is what I mean by extension for prevention. If you find corrosion of the surface of the enamel make the lines of the enamel margin include it, make extension further in the same direction to save the tooth from a recurrence of decay, extend the cavity around those angles as far as corrosion has occurred, then make a perfect filling, and it will be a long time before you have to fill that cavity again. It is better to do that in the first place than to remove the filling on account of recurrence of decay.

DR. CUSHING: I wish to say a word in reference to the method Dr. Black advocated of handling the chisel, because I know that a better margin can be made with a properly tempered cutting instrument, than by any other method, I do not care what it is. I am sure the margins can be made perfectly smooth, but the instruments must be keenly sharp, and that is something you very rarely find dentists using; they attempt to use instruments that are not sharp, and that is the reason they do not make good edges by the use of cutting instruments. If the instruments are properly tempered and kept keenly sharp, you can make a most perfect edge.

DR. PRICHETT: I desire to say a word or two in regard to Dr. Black's remarks upon extending cavities for prevention, as he calls it. I have had the good fortune to be in possession of his treatment for incisors in advance of his publication, and I have been keeping my eyes wide open ever since. I have been wonderfully surprised at finding so much corrosion above what I had hitherto regarded as sound enamel upon the surface, that is, it was so slight that I had heretofore regarded it as being sound, and I did not extend the cavity, simply thinking I was cutting away good material. But with this eye-opener I have been seeing things in an entirely new light. I regard it as one of the admirable precautions to be observed above anything I have seen in a long time.

DR. BLACK: I wish to emphasize Dr. Johnson's statement of the necessity for cutting away the angles of bicuspid and molars.

These angles are often left when there is secondary caries of the enamel (from the inside). The fillings are lost from the fact that this breaks away, or they are so imperfect that they begin to fall to pieces of their own accord.

PROSTHETIC DENTISTRY.

BY DR. W. T. MAGILL, ROCK ISLAND.

Mr. President and Gentlemen:—In presenting this important branch of our profession it is not my intention to deviate from established rules, but rather to profit by past experience and combine the best methods of some of those that have proved to be the most successful in practical results.

We boast of the rapid progress made by our profession in the last few years—in this department there is yet a wide field for improvment open before us. We are constantly reminded of our own imperfections and the imperfections of others, who are striving assiduously for more light and better results.

An article by Dr. J. H. Woolley, published in the DENTAL REVIEW, Vol. V. No. 1, entitled: "The Art of Expression in Relation to Prosthesis," has given much food for thought and study in relation to this subject, much that should be better taught in our schools and if possible better described in our text-books, it would be well for every prosthetic dentist to study the rules of division—into parts—of the facial line, *i. e.* the line from top of forehead to base of chin. These rules are helps, yet it remains for the intuitive art, the sound judgment, the practiced eye, the trained hand to restore the features and mouth to their natural shape and expression.

Prosthesis in Surgery, according to Webster "to restore a lost part"—which would seem to imply nearly all dental operations—if we fill a cavity in a tooth caused by caries, or otherwise, if we crown a root with gold shell-crown, or porcelain, or contour the same by building it out with gold foil, plastic, or amalgam, it is the same restoration of lost parts, as well as to restore the entire denture by artificial plates and teeth, or partial dentures with a system of crowns and bridges, to illustrate—we will suppose a case with central incisor missing; now as men differ in their diagnosis of such cases, we will assume the comparative method. One says use gold, or metallic plate, for all partial plates, with bands or clasps to bicuspid on either side—one would use vegetable base to cover the palatal arch to get atmospheric pressure to sustain or retain the

plates in position, the one who makes gold and porcelain bridge work would either band the adjoining tooth on either side or cut slots into the adjoining teeth and insert bar and secure the whole in place by packing the slots receiving the bar, first with cement to prevent moving, then finish with gold or amalgam—the one who favors implanting would drill into the alveolus and implant therein from the jaw of one less fortunate a tooth formed by the hand of Him who created all things; these several methods are described in the text-books and leading periodicals and it remains for individual effort to exercise skill and judgment to give the best results in any given case. It matters not perhaps which of these several courses we pursue or what the case may be, each of its kind to be successful must be accomplished by the same thoughtful, careful, persistent effort.

Many of our operations are partial failures, because of insufficient time being taken to study the smallest detail of each case, as no two are the exact counterpart of the other, but each has an individuality of its own which must be carefully studied if we expect our efforts to be crowned with success.

Partial upper plates of gold clasped to the remaining teeth, if properly adjusted, may be worn a long time without injury to the natural teeth, yet with careless habits and a plate with clasps that moves with each and every occlusion of the mouth, the adjoining teeth will soon be destroyed by the attrition, such cases should be made firm with the clasps or bands to fit the tooth so clasped with sufficient spring to hold the piece firmly in place during the act of mastication; clasps or bands that simply embrace the adjoining tooth or teeth as a wire around the neck cannot be too strongly condemned.

To give the best results a band should be the full width of length of crown, and adjusted previous to taking the impression in plaster, bringing the bands away with the impression, if gold is used for base plate, that also should be placed in position, and impression taken over the whole—the cast made with plaster and marble dust—teeth fitted and the whole soldered at one heating; if vulcanite is used, make the cast in plaster alone and proceed in the usual way.

Such cases are—where applicable—in many ways preferable to a bridge cemented to the adjoining teeth. The ultimate success of this class, as well as of all bridge plates or pieces depends wholly

upon the absolute precision of adjustment to the abutments or anchorages and the proper adaptation of the piece to its base and the occlusion of the opposing teeth.

Full dentures mounted upon gold plate, with gold, are at present almost as seldom seen as were dentures carved from ivory fifty years ago, but unlike the ivory, which in a short time changed color from absorption of the secretions of the mouth and the misfitting from the manner of construction. Gold plates of ante-rubber date (I might add ante-bellum also), were many of them models of mechanical and artistic skill and the accuracy of fit is seldom excelled by the cast or moulded dentures of to-day; many of these dentures made during the fifties are still in good preservation and have been doing constant service all these years, preserving the contour of face and feature as well almost as many of the same age, who have retained their natural organs; there was one serious objection, however—no plate could have teeth ground to fit so accurately as to exclude secretions and particles of food from becoming impacted between the plate and teeth, and if the process of deodorizing was neglected by the patient, in a short time they became decidedly offensive.

The combined metallic base plate with vulcanite or zylonite attachment overcomes in a great measure the above objection with the additional advantage of weight in favor of the latter and more readily adapted to the restoration of features where excessive loss of alveolus from absorption or extraction occurs. In this method we have the resonance of the metallic, the minimum of space it occupies, the compatibility (if I may use the term) of the plate to the mucous membrane, there being no perceptible chemical or galvanic action to the wearer; aluminum plates constructed in this manner can be worn by persons who have suffered from ptialism with perfect immunity; there seems to be a pathological virtue in this plate that can be worn with comfort and satisfaction, where plates of gold constructed in the same way and for the same mouth have proved failures; in this connection the field for the display of artistic taste and skill is wide indeed.

The Chase method or patent of covering palatal portion of the mouth only with swaged or metallic plate, and the alveolus with vulcanite or zylonite is a combination that promises good results, from the simplicity of its construction, together with the advantage of trying the plate in the mouth to ascertain if there be any rocking

or undue pressure, it can be relieved and proceed with almost absolute certainty of success.

It has been said that the platinum base and porcelain continuous gum dentures are to be compared as the crowning act in artificial dentures, they are indeed many of them models of beauty and perfection of art in prosthetic dentistry. The history of this method commenced in about 1820.

"M. Delabarre, of Paris, made experiments in enameling platina plates, after the teeth had been arranged and soldered thereto with porcelain cement to represent the natural gums without joint or seam, which associates his name with the early history of this method of making artificial dentures. In about 1844, Dr. John Allen, of New York City, commenced a line of experiments which resulted in the beautiful style of denture and embodied the main features as presented in the work as it is now constructed. Until this time little thought had been given the restoration with a denture other losses than the teeth alone, the possibilities opened by the invention of this work by Dr. Allen, embraces the restoration to face and features all losses resulting from extracting the natural organs and the absorption of gums and tissues."

I quote above extracts from Vol. II., page 667, *American System of Dentistry*. This method, with all its beauty and high artistic skill required in its construction, although durable for all time, has its objectional features, its excessive weight and excessive cost to those who are not fortunate in the possession of this world's wealth. Happily for the many of this class, and it is an established fact that all first-class productions of whatsoever kind have their imitators, and in this we have the vegetable bases, which in so far as the restoration of face and feature from loss of teeth and absorption of tissue is concerned, are equal to the above system and in respect to weight superior, although inferior in almost every other respect. With the introduction of this base the standard of Prosthetic Dentistry was trailed in the dust for almost a generation or until the present method of crowning and bridging had become generally practiced, which has in a measure restored to prosthetic dentistry something of its former standing, these methods of accomplishing the same end are somewhat various from the soldered band and swaged or built up cusps, the Richmond method, so called, to the seamless crown of Dr. Call, E. Parmley Brown and others.

The one that in the estimate of the writer must be accepted as

par excellence is one that is made for the space it is intended to fill; the seamless bands are well in their place; after fitting to the root, the cusps should be made with reference solely to cusps of the occluding tooth or teeth; in this way only can the best results be accomplished.

In one of the late periodicals (which having mislaid, cannot give page or title) Dr. Ottolengui describes his method of making a crown for a molar tooth where the space is very limited and tooth sensitive, as follows: "Fit band and grind or file it down to the proper occlusion, then cut a very thin plate of platina to form cap or crown, grind with corundum disks to form cusps"; it is on this principle that the favorite crown of the writer is made where the natural teeth are much worn and pulps still healthy and it is desired to lengthen the bite, fit the band and contour it, file to the length desired, place on the root and within the band place a disc of writing paper over the root within the band covering the end of the root, now fill the band out with softened Gilbert's stopping and direct the patient to close the teeth; this gives the length and also the form of occluding teeth and guide to form cusps, if needed; remove band and invest in plaster and marble dust, leaving only the end containing stopping visible; when thoroughly dry remove the stopping and press on the end of band a piece of tissue paper; this gives a pattern; cut to mark, and paste on to a thin pure gold or platina plate cut to the paper and it will fit within the band forming a cup which is now ready to be fitted with gold of a lower carat, coin will do, cut into small pieces and dropping them in with tweezers held in the left hand, holding the blowpipe in the right and you have a crown that will not return to you in two or three years with the grinding surface worn through, a crown that will sustain as an abutment any bridge piece that may be desired to attach to it, as the lower third of the crown is solid throughout.

Dr. Knapp, of New Orleans, some years ago read a paper before the first District Dental Society of New York, describing his method of constructing gold and porcelain crowns for bridge work [see samples] which for strength, durability, cleanliness and artistic skill are all that can be wished for. In this crown there are no vacuums, seams or joints to absorb secretions or become foul. This crown is solid throughout and when a number of them are soldered together they make a structure that for strength, service and natural form as to occluding surface is all that can be desired.

The prosthetic dentist should be an artist, sculptor, quick to perceive, quick to decide, an anatomist, a physiognomist, in fine, a natural mechanical genius.

DISCUSSION.

DR. J. A. W. DAVIS: I am sorry indeed, as you all are, that Dr. Stone is unable to be here to open this discussion.

The subject before us is of more importance than many of you have been willing to admit in years past. I have no criticism to offer on the paper, it was a good one, and the subject was well handled. I shall only add a word or two to the question to open the discussion, and that is all I am expected to do. I did not know that I was to be called upon when I came here, and there are many here that might have been selected who are better able to deal with the subject than myself.

This subject, since crown and bridge work have been introduced, has taken a very different phase, more so than many of us are willing to admit. There is more in it than some of us are willing to admit. But in the past it was neglected, and some almost wanted to deny that we were guilty of making a plate, that we wanted to turn it over to an assistant or to a regular mechanical dentist. Now, that is something that cannot be done by any one outside as well as the operator, as well as that man who extracts teeth. You are all aware of this fact. If we have been acquainted with a patient for years we know the expression better than we do when all the teeth are out.

Another important thing is to go slow, do not take an impression in a hurry, build up the teeth in a hurry, and send the patient away in a hurry. We should not be hasty in putting in a trial plate; we should take plenty of time in testing it. We should talk with our patient, and after we have talked with him a while you will notice that there are changes necessary, which would not be observed if you did not talk to him. There are a great many cases in which plain teeth should be used, and there are still other cases in which gum teeth can be used just as well. I make a practice to have the artificial teeth a little smaller; you cannot make artificial teeth as large as natural teeth well; they may be exactly the size, but they appear to me to be considerably larger, consequently I select smaller teeth for the artificial than the natural. It is not necessary for me to say anything about the shade; you know that

care is necessary, especially in selections for partial plates. I knew one man that would put in anything. If he did not have the proper shade in his office at the time he required them, even if the teeth were yellow he would put them in, if a bluish shade was required to match the natural teeth. There is nothing so disgusting as to see two opposite shades of teeth in the same mouth. Too many perhaps use teeth in the country, not having a large assortment to select from, that should never be used under any circumstances.

Because we have such and such teeth on hand we think they will do, whereas by going to a dental depot we can get something better. If we have not got the proper shades and sizes, we should wait and send for them. If we cannot get what we want when we do send for them, we should do the best we can under the circumstances. If we are going to put in four teeth we should be careful to have them of the required size and shade. Sometimes teeth are put in too small or too large; they are not suitable to the case. When they are of the right size, a different effect is noticed. We should take a little time to accomplish these things.

A word in regard to crowns. I have seen some persons where the front teeth would be crowned with a gold shell crown. I do not think any dentist in Illinois or any other State should put in a gold shell crown on a front tooth. If the dentist does not know what to do in such cases, he had better send the patient to some one else that does know. If patients are not capable of judging as to what they require in these cases, I think the operator should be and should insist upon putting in something else besides a gold crown on a front tooth.

I have used the Chase combination plate some, and I like it very much, but in some respects I do not think it as good as a gold plate. The roof of the mouth is where we need it most. I believe the electro deposit plate made by Dr. Smith, of Chicago, is going to be the plate in the future. I have not had any yet, but I expect to get some soon. If a good model is made the electro deposit plate certainly will fit better than any other plate. It can be made very strong and the price is within reach of most all patients.

DR. W. O. KULP, Davenport, Iowa: I do not intend to say much about my clinic; I intended to do something, but I depended upon Dr. Sitherwood to get me a patient to operate on, and he did not do so, and for that reason I did not have an operation.

The subject that I had chosen for a clinic is a question in many minds. What is it? What is the technique? Of course, a man making artificial teeth has to do that very largely in order to accomplish what he aims to accomplish in his operation in replacing the natural teeth. He must have them so arranged when they are completed that they will harmonize with the features and also do their duty as far as mastication is concerned. But the principal point is to harmonize the general features or the general expression of the face. We find a great many people who have natural teeth that look as though they had somebody else's teeth in their mouth. By examining the face and teeth for any length of time, in conversation with them, and in repose, we can imagine that if a tooth was cut at some particular point it would improve the face a great deal. Then we look at it further and know that if it is shortened somewhat at one side or point, or narrowed clear back as far as the molar, the face would be very much improved. This we call art technique, cutting off the teeth to harmonize with the features. One may be surprised to know how much of a tooth you can cut away without injury to your patient.

I had a case come into my hands over twenty-five years ago. It was the case of a young lady who had a fine education, cultured, but had a most hideous set of teeth, much too large for her, but sound and strong masculine-like teeth. She was ashamed of them, and said to me, "Doctor, can't you do something with my teeth; if you can't do something to better their appearance you can pull them out." She was a friend of mine, and I told her that when she came next time to bring along her father, and I would talk the matter over with him. Her father came with her, and I suggested cutting the teeth down, shortening and narrowing them, and he said I could do anything I saw fit. I told him it was a little risky, but I imagined there would be no serious result, and she had them cut away. I cut and shortened them fully one-third in the course of two years, then polished the surfaces. That was about twenty-five or twenty-seven years ago. She has these teeth still, and they are in good condition now. Since that time I have been free to cut my patients' teeth as much as I thought they ought to be. Very few patients come to my office but I make some change before I am through with them. It gives satisfaction to my patients. I should have been pleased to demonstrate this in a clinic of this character in

order to introduce this matter to the profession, but as I had no patient to work on I could not do so.

DR. BLAIR: What do you cut them down with?

DR. KULP: I cut them down with corundum or sand paper discs.

EXPERIMENTAL STUDIES ON THE ACTION OF DIFFUSIBLE MEDICINAL AGENTS IN LIVING TEETH AND IN PULPLESS TEETH.

BY A. W. HARLAN, M. D., D. D. S., CHICAGO, ILLINOIS.

In the last dozen years a few experimenters have questioned the usual method of saturating a cavity for two or three minutes with a coagulating or even a non-coagulating drug prior to filling; claiming that such a practice would not destroy bacteria or their spores always present in cavities in all teeth. Recently Dr. Miller has presented a list of experiments with a number of commonly used medicinal agents in which he has apparently proved that such saturation of cavities is insufficient because of the lack of time to accomplish the desired object, viz.: (I have called attention to this fact in the transactions of the American Dental Association, 1887, and elsewhere in papers read before societies) Complete sterilization of the minuter infected contents of carious cavities. On several previous occasions we have pointed out the following, viz.: That the mere wiping of a cavity with a drug in full strength would not render the cavity aseptic even though nearly all of the carious matter had been removed.

When the proposition was first made that the roots of teeth might be filled by what was termed the "Immediate process" we strongly opposed it on the ground that sufficient time was not allowed for complete sterilization of infected dentine. This was pooh-poohed by a good many who said that 95 per cent carbolic acid, chloride of zinc or iodoform in connection with the previous application of Labanoques solution of chlorinated soda or peroxide of hydrogen or other drugs would in every instance render the tooth aseptic and produce no future trouble. The experiments of Miller reported in the *Dental Cosmos* for May will partially show that our position in this matter was correct although his experiments are not at all conclusive.

In my series of experiments on teeth planted in plaster of Paris reported in the transactions of the Iowa State Dental Society for May, 1890, and the previously written paper for the International

Dental Congress at Paris, September, 1889, I took the ground from those experiments that the best method of applying drugs to a cavity was to allow them to remain for a period of one to ten days or longer in order that sterilization might be made complete. This is not always practicable in cavities in living teeth nor is it an absolute necessity. One of my objections to the "immediate" method was that coagulators in a concentrated state defeated the object of their introduction by surface coagulation as was pointed out in a paper read and experiments performed in the presence of this society at the meeting held in Quincy, May, 1889. It was there shown with a list of nearly fifty coagulating agents that every time such an agent was brought in contact with an albuminous substance that the drug, unless it was a pure escharotic, failed to afford the desired protection from future disturbance by reason of the above demonstrated fact, filmal or surface coagulation only. If any of the various pathogenic bacteria were in the deeper portion of the partially decalcified dentine or their spores were present they were not destroyed. This fact accounted for the frequently observed continued decay of the bottom of a cavity in a tooth where a layer of carious dentine had been allowed to remain under a filling. I have seen in many cases the ultimate destruction of a pulp of a tooth even though it had been carefully capped with a non-conductor where such had been the method employed, *i. e.*, the leaving of carious dentine, insufficiently sterilized between the cap and the pulp. Many years ago, as you know, Pasteur pointed out that a certain class of micro-organisms would live without oxygen, he denominated these anærobic microbes. No sufficient proof has been adduced as yet that his statement was incorrect. We have then to deal with this form of microbes in infected dentine not alone in living teeth but in pulpless teeth and for that reason I stated in the papers previously referred to that a class of agents should be used which were non-coagulants and capable of permeating infected dentine. In the experiments of Dr. Miller, some of the non-coagulants received a setback at his hands, more I believe from his manner of using them than from any inherent weak properties, as I will endeavor to show.

PREPARATION OF CAVITIES.

In order to make as complete an exposé of the methods to secure the best results with disinfecting agents I trust you will

overlook a little tediousness of detail. When a cavity is sought to be excavated with the object of filling it immediately, the sharp edges and corners should be cut down with a chisel, the tooth is then to be washed with tepid water and the rubber dam applied. The cavity is then superficially dried and is then to be washed with peroxide of hydrogen, or an aqueous solution of sodium fluosilicate 1 to 200. If the cavity is pressed full with beta-naphthol for a minute or two it will abstract water. Chloroform may be used for the purpose of removing grease or adherent mucus from the cavity. The dried sulphate of zinc and absolute alcohol, glycerine and bicarbonate of soda will readily abstract water and various other agents which it is needless to mention. Redry the cavity. Now apply a pledget of cotton or paper fiber lint wet with oil of cassia, eugenol or myrtol. I prefer the latter pure. Myrtol is not destructive when applied to the mucous membrane, it is rich in its oxygen carrying capacity, is easily diffusible, has no unpleasant taste and is capable of depositing more volatile camphor with greater disinfecting power than any of the essential oil group. See experiments of Pflugge and Frankel. Dr. Black says: "It is high time that the dental profession and the medical profession should recognize the fact that it is not always best to use the most virulent poison as a disinfectant." As the excavation proceeds keep on reapplying myrtol so that the cavity will never be quite dry; when the excavation is completed the cavity is again bathed with myrtol and dried. If a layer of softened dentine must remain in the bottom of the cavity use the following prescription to disinfect that:

℞ Corrosive sublimate, gr. ij.

Peroxide of hydrogen, ℥i.

Tartaric acid, minims v.

M.

Aqueous solutions of Labarraque's solution, permanganate of potash or boro-glycerine may be used in place of the above, or even pure glycerine.

In applying the above to such a cavity I use a pair of wooden pliers, or pliers with platinum points. Dry the cavity and then apply the myrtol in full strength and dry it again. All infection, septic or infectious matter will be destroyed by this method. There will be no coagulation of the organic portion of the dentine up to the time of the application of the bichloride solution. Then it will be incomplete and will not prevent the diffusion of the myrtol

throughout the partially decalcified dentine. This method of making use of the oils has been tried repeatedly out of the mouth and there were no colonies found to grow from the transfer of small portions to suitable culture media. Clinically this method will commend itself to any one, as it is easy of trial.

Oils of peppermint, camphor, turpentine, thyme, cassia, cinnamon, caraway, eugenol, cajuput, eucalyptol, terpinol, myrtol or sassafras may be used in this manner with perfect safety. In the dental surgeon's hands while all the above named oils may be used as diffusible disinfecting agents, some of them are more powerful in their action on micro-organisms than others. For instance, oil of turpentine and terpinol are hydrocarbons, but the above and peppermint and myrtol are in nearly every instance more potent as germicides than eugenol, eucalyptol, camphor oil, sassafras, cassia, cinnamon, caraway or cajuput, but even the latter in full strength are all powerful when applied for the disinfection of infective material in the cavity or roots of a tooth. Cassia has been shown to be the most powerful of the last named (Black). It is perfectly well known that these oils have stearopten bases which as they grow older are in solution and when brought to a temperature of 94° F and upward will deposit such camphors as are peculiar to the particular variety used. These camphors are disinfectant, diffusible and are exceedingly pleasant and they are non-coagulators of albumen as well as valuable stimulants. They may be used to diminish the causticity of carbolic acid and they will dissolve the iodine compounds, combine with glycerine, creosote and are capable of very slight solubility in water.

If it is deemed a necessity to apply an antiseptic agent to a cavity in a tooth having a living pulp, an oil may be left in contact with the cavity, sealed with gutta-percha or the cavity may be stopped with the oxysulphate of zinc for any number of days. There is no danger of a tooth being discolored when a volatile oil is sealed within a cavity as they are all absorbers of oxygen and oxygen is a bleacher *par excellence*. The cavity should be well dried before introducing the oil.

There is no theoretical objection to the use of carbolic acid in the cavity in a living tooth, if it is reapplied from time to time, preferably warmed. It should not be used to protect the pulp from the invasion of micro-organisms in the deep-seated cavities previously referred to, as it will prove inadequate by lack of diffusibility

The juices of dentine are like a diluted blood serum, not very large in quantity, but effectual barriers by virtue of their coagulability, to the entrance of carbolic acid, creosote or chloride of zinc, unless they are very much diluted. It will be noticed that the means recommended for drying the cavity always permits of the use of oils. It would be folly to attempt their use in a cavity without first using chloroform or an aqueous solution of some alkaline body which should be non-irritant, and at the same time nondestructive to the substance of the tooth. Solutions of sodium biborate, sodium fluosilicate $1/200$, or boracic acid $1/300$, will answer for this purpose.

DIFFUSIBILITY IN PULPLESS TEETH.

When a pulpless tooth is to be handled, any or all of the following conditions may be observed : The pulp has been recently devitalized with the pulp intact, it is in a state of decay ; it is decayed or has long been putrescent ; or having been removed by caries or designedly, the pulp cavity is exposed to saliva, etc. It may have atrophied, or having been converted into a gaseous substance, it has completely infected the dentine which has become discolored. When the pulp has been destroyed by the use of arsenic and the saliva has not been allowed to enter the cavity, nor an infected instrument or water, the dentine, except in the main cavity of decay needs no sterilization, unless it becomes infected accidentally. The same care must be exercised in carefully sterilizing the cavity in a living tooth ; even greater care should be used, for if anything is done that will cause the tooth to change color it is detrimental. I will venture to repeat a former statement made at the Union Dental meeting, Boston, 1890 : " From the time an arsenical application is made to the pulp of a tooth up to the completion of a root filling, nothing should be allowed to enter the tooth which is not placed there by the operator. Water, saliva and any foreign matter must be rigidly excluded." If this care is exercised there will be a minimum of abscesses. There is no particular objection to bathing the interior of a dried, sterilized root of a tooth with carbolic acid in a case of this kind if the cavity of decay has been excavated and there is no discoloration of the crown ; but if the crown is discolored, it would be better practice to use chloride of zinc, diluted, twenty parts to eighty of water.

If it becomes a necessity at a later period to bleach the tooth the zinc chloride will not hinder the process. Even in a case of

this kind it is better and safer to use an essential oil such as I have mentioned, in the dried root previous to filling, because of the stored oxygen in the oil, which leaves a constant bleacher in the interior of the tooth. In course of time it may be dissipated and pass through the cementum and pericementum, but oils are not irritants, hence they will not injure the tissues. Coagulating agents simply coagulate and leave the coagulum to become a source of food supply to the ærobic and anærobic microbes. The oxygenated oils destroy them in two ways: Those which are poisoned by oxygen are destroyed when they come in contact with the oxygenated oil; the ærobic are destroyed by the volatile camphors which have as their basis $C^{10}H^{16}O$ or O^2 . This will be the most cogent reason for using them in the dried root. In the other conditions of pulpless teeth, save the one above mentioned, a still stronger necessity exists for the use of oils as sterilizers than applies when pulp destruction has been practiced by the dentist himself.

The putrefactive decay of the pulp of a tooth within the pulp chamber, when there is no cavity in the crown, ought to be sufficient evidence that the anærobic microbes exist, without external oxygen, for who has not bored into such a tooth with a drill and smelled the foul gases escaping therefrom, and seen the flow of pus from the pulp canal? Pus cannot be produced except by the agency of micro-organisms. (Black, Knapp, Ernst and others, see the Medical Record for 1888.)

In all such cases the dentine is saturated with the cadaveric alkaloids which it is our duty to destroy or get rid of. I ask you if the best method of doing that is to introduce coagulators and seal them in the dentine or first destroy or dislodge them? There can be but one answer to this, the coagulator has no place here. In all my experiments on teeth out of the mouth the coagulators in not a single instance passed through the dentine; as soon as the concretion of the surface of the cavity was effected their action was stopped; when this concreted surface was removed the dentine beneath smelled badly, which of itself would prove the nondiffusibility of a coagulator. In every case on the other hand the oils were diffused through the dentine and cementum and they were found in the plaster of Paris surrounding the roots of the teeth. In some of the cases the cavities, including the pulp canals were slightly moistened with water in order to determine whether that would be a bar to their diffusion, but it offered little or no obstruc-

tion to the permeability of the oils into the dentine. The oils will not coagulate, hence they cannot imprison a stored up gaseous body or other poisonous matter in the dentine and by virtue of their diffusibility and their combined camphoraceous bodies any septic matter, cadaveric, ptomainic or microbic is rendered sterile by this class of disinfectants. With reference to the *modus operandi* of diffusible agents corroborative evidence is abundant as may be seen from experiments made with the aniline colors in 1874. At that time I prepared for the late Dr. Dean more than fifty specimens of staining the dentine with the aniline colors. These stainings were made through the whole substance of moistened dentine which simulated as nearly as possible the conditions surrounding a tooth when it is planted in the alveolus. I succeeded in staining the dentine of teeth and the cementum with the now much vaunted pyoktanin series.

A practical clinical evidence of the possibility of staining or discoloring dentine or cementum is found in the insertion of biased posts into the roots of teeth, again the breaking of a steel broach in a tooth, even though the interior of the root be nearly dry at the time, has resulted in the discoloration of the dentine by dissolution of the steel and the ends of the adjacent enamel rods have been discolored as well. Evidence is not wanted to show that nicotine will permeate dentine and many vegetable juices will also impregnate the dentine from the exterior. A putrescent pulp, with the H^2S and other mephitic gases found in the interior of a perfectly sound tooth is offered as another visible evidence of this proposition.

In the use of diffusible agents in the open cavity of a tooth, already pulpless, after syringing the cavity with tepid water no attempt should be made to disturb the contents of the pulp chamber or roots until the partially dried cavity is gently swabbed with a cotton pellet wet with the bichloride solution previously mentioned or with chloroform; when this is done the diffusible agent is to be introduced into the pulp-chamber on cotton, silk or fiber lint. Occasionally small portions of the contents of the pulp-chamber may be removed, if no force is directed against the apical end of the root. There the greatest danger lies. If any poisonous or infectious matter is forced through the root, trouble ensues. Blood serum will not avert contagion in such a circumscribed area as is found around the apex of a root. I do not wish or desire a quick acting disinfect-

ant in such a place as time must be allowed for the diffusion of the drug, through the mass of infected or septic contents of the tooth and also through the dentine. I consider this a matter of great importance for the following reasons: When infective material is long in contact with sound dentine, even though there be an open cavity, it becomes polluted. If there should be any defect in structure, interglobular spaces or excavations or more than one foramen in the root, gases of decomposition will find a lodgment. Again the cementum is occasionally absorbed and redeposited on the dentine after the death of the pulp and even portions of the dentine have been carried away; if at this time infectious matters are present in the root canal in sufficient quantity we may account for the pericemental irritation which at times is so pronounced that we are otherwise unable to account for it.

If at this particular period in the history of a pulpless tooth the "immediate coagulating method" is practiced, the doom of the tooth is sealed. But if the slower diffusible agents are used they may, by their gentle stimulating action, not only do no damage, but they may assist in the redeposition of the lacking cementum. In no instance will these agents destroy the odontoblasts. To return to this interesting phase of the subject, after the lapse of three or four days the contents of the pulp chamber and the canal may be removed with sterilized instruments, being careful even at this time to use no force in doing this delicate operation. The diffusible drug may now be used freely if the cavity has been thoroughly washed with peroxide or any of the aforementioned non-coagulants. It is safer and better to allow such a dressing to remain sealed in the root for ten days before the instrumentation required prior to root filling is practiced. Saliva and water must be excluded from the tooth during the whole period of disinfection. It is only by keeping water out that the oils can be made perfectly effective. If pus flows from the canal when the tooth is first seen there is no necessity for the use of an instrument in the root at that time. Simply get rid of the pus by aspiration or the destructive action of peroxide and the acidulated bichloride solution and dry the root canal, introduce the oil on cotton or otherwise and exclude moisture by a gutta-percha perforated plug. Water will not contaminate the oil. Bacteria will not live in it unless it be oil of gaultheria. If it is not possible to use gutta-percha as a covering, petroleum jelly can be used on cotton for a day or two

until soreness and elongation of the root has disappeared. By the use of the oils the pigments will be bleached which may be lodged in the tooth. If there are any red blood disks present, the addition of a small pellet of cotton moistened with a saturated solution of tannin in glycerine will fix them so they will not disintegrate and cause further discoloration of the crown.

The volatile camphors which are deposited will destroy any septic or infectious matter present, and we have to deal with an aseptic root interior at the time of the introduction of the root filling. This of course is gutta-percha, always preceded previous to its introduction with either oil of cajuput or eucalyptol. Other agents will dissolve gutta-percha, but none of them are so agreeable to use as the ones mentioned. Both are effective sterilizers, and they will aid by their solvent properties the diffusion of gutta-percha in the minutest openings in dentine or multiple foramina. The rubber dam which encloses the tooth operated upon should be washed with a sodium fluosilicate solution, 1 to 200, and all instruments used in the various operations required must be sterilized with the $\frac{1}{300}$ boroglycerine or other effective agent to accomplish that purpose. If the dentist desires to reduce to a minimum the casualty of pericemental inflammation and abscesses, he must be thus thorough in his use of topical medicinal agents, and he should be on the alert to avoid conveying to or covering up contagium in a pulpless tooth.

SUMMARY OF THE REASONS FOR DISINFECTION AND THE MEANS OF ACCOMPLISHING IT.

All cavities in living teeth and pulpless teeth, are infected through the agency of pathogenic bacteria or micrococci. (Black, Milles and Underwood and Miller.) These micro-organisms and other septic matters cannot be destroyed in excavating a cavity in a living tooth short of destruction of the pulp by coagulating drugs, save in rare instances. Dilute solutions of bichloride of mercury, peroxide of hydrogen and some of the naphthol compounds, belong to this class; coagulators cannot be used in a sufficiently diluted state to accomplish disinfection without injury to the parts to which they are applied. Diffusible drugs will destroy septic materials, including the cause of infection, without injury to the living hard or soft tissues. The above will apply as well to infected pulpless teeth, and this is even truer with reference to the coagulation of the

exposed organic matrix in the interior of a tooth partially softened by caries.

METHODS OF EXPERIMENTING TO PROVE DIFFUSIBILITY.

Plant teeth in melted paraffine, plaster of paris or melted sperm candles. Before the teeth are planted, open the pulp chamber and canals and remove the pulp. Seal the foramen with lead or gutta-percha or oxychloride of zinc. Dry the root interior, then introduce the oil on cotton, being careful to not allow any of it to contaminate the material in which the teeth are planted. Seal the crown cavity with gutta-percha; at the end of five or ten days remove the teeth, by lifting them from the bed in which they were planted, with forceps which are free from oil, fixed or volatile, and submit the paraffine, plaster or other material to a chemist to discover whether the cassia, myrtol or other oil can be found in the investing material. If it is found the proof is before you; if not the material was not diffused through the teeth. In this manner I have found that all the volatile oils and turpentine will pass through dentine and cementum, but carbolic acid, creosote, chloride of zinc and aromatic sulphuric acid will not pass through the dentine or cementum. The best plan is to plant six or twelve teeth in rows of three, about one inch from each other. A common coke pan may be used where there are partitions to separate them from each other.

DISCUSSION.

DR. P. J. KESTER: I had the pleasure of reading Dr. Harlan's paper before it was read here, and I shall certainly avail myself of the opportunity to read it again. It is not expected that I shall be able to discuss the paper with any degree of interest. The most I can say is that we are under great obligations to Dr. Harlan for the excellent paper he has presented, and for much other valuable work he has done in this direction. This paper, to my mind, is one that may be studied with great profit to all of us. Scientific, medical and surgical science has developed so rapidly that a new class of remedies have been brought to our notice within a few years. We have had a description of these remedies. We find that a 5 per cent solution of carbolic acid will destroy microorganisms. The statement seems plain, yet it has been demonstrated by experimentation that 5, 8 or 95 per cent carbolic acid is not a good disinfectant in the presence of albuminous substances; that bichloride of mercury, 1-1000, is a wonderful antiseptic, yet in the presence of albuminous

compounds it is powerless. It is only by making such experiments as have been reported and the work that has been done by our progressive men that we are able to select remedies that are reliable. We have used these remedies without testing their value, and we find, after years of experience, that they are absolutely worthless. We reap the benefit of the work of these investigators, as they prove the worth of worthlessness of these remedies for us.

I do not feel competent to criticise any of the statements that Dr. Harlan has made, or to offer any new ones. I simply want to say that the subject is one that will bear study and investigation for ourselves, as each one of us can be greatly benefited by this class of work.

DR. BLACK: This is one of the most important subjects we have to consider in this meeting, and should not be passed without further discussion. I can hardly conceive of a subject more important for dentists to understand than the management of those cases requiring antiseptic treatment. There is no other class of men engaged in the healing art who have such a field for the use of antiseptics, or who can use antiseptics to such an advantage as dentists. We can use them with more certainty, we have use for them oftener, and we should be able to use them more definitely and more exactly to the purpose than any other class of practitioners. I would like to see every man here anxious to get as near to the exact facts upon this subject as is possible, and especially to avoid the use of remedies as antiseptics which are not antiseptic.

As to the paper, I cannot discuss it as I would like to do. As to the particular points made in the paper, before discussing them I should like to read it carefully. One thing I will say, however, Dr. Harlan seemed to use the words *infectious matter*, where I should have preferred the words *septic matter*. Many times the dentine is filled with poisonous septic matter when it does not necessarily contain infectious matter. We should make a sharp distinction here. The dentine may be saturated with the products of putrefaction or the products of decomposition—septic matter, and no living microbe may have entered the dentinal tubules. In such cases we have the dentine filled with material that is poisonous, and may be poisonous to the peridental membrane, to the tissues around the root, nature failing to get rid of it, yet it is not infectious matter, it is septic matter.

DR. CUSHING: Will Dr. Black kindly explain the difference between infectious matter and septic matter?

DR. BLACK: Infectious matter contains living particles, microorganisms. It is composed of particles that will grow and reproduce themselves. Septic matter may be in solution; it is poisonous. It is the product of the growth of microorganisms, and it is this product in the dentine that is dangerous in many cases, to the exclusion of infectious matter; for while infectious matter may be in the dentine, may live there for a time, it certainly will not live there very long if communication by which it receives food is cut off. It must receive food in any case, and must get clear of its waste products or it will soon be choked. Though microbes may not be present in the dentine, there is danger of poisoning from the septic matter that is absorbed, filling the dentinal tubules.

We have a different set of conditions where we leave a little bit of softened dentine over a pulp nearly exposed. We may cover in the anærobic microbes. In a short time they produce products that will destroy the pulp, or they may pass through and penetrate into the pulp, and we may have an infected pulp presently from the microbes we have covered in. This action is brought about rapidly and the poisonous matter escapes toward the pulp. If we have covered them in there with the filling we have sealed up the elements for destroying that pulp. It is not necessary that the dentine be softened more; it may not be a class of microbes that soften dentine. If it is a microbe that attacks the sarcous elements of the body, the contents of the dentinal tubules are attacked just as well. So here we need a disinfectant. What shall we use? Certainly not one of the coagulants; certainly not one that places a barrier to its own penetration by coagulating the albumen, as does carbolic acid, bichloride of mercury and some others. These are not the antiseptics you should use in this place, but something that is diffusible, that does not coagulate albumen, something we can depend upon to penetrate in the presence of albumen, and we find that to-day in the use of the essential oils, and among them the oil of cassia is the most potent. There are many of the essential oils that when used in substance will destroy microbes just as quickly as the oil of cassia, and among them may be mentioned the oil of turpentine, but there is none of them that will destroy microbes so rapidly and so certainly with that proportion of the oil that will dis-

solve in water, or the fluid with which they come in contact in their application in practice as the oil of cassia. This is an important difference ; it is a test we want to make. Within the last two years I have been gathering a very large amount of practical experience with the use of the oil of cassia as compared with other antiseptics in use. I cannot think of giving you the benefit of this now, as it would take too much time. I will only allude to one or two cases.

A young girl came to me with an ulcer on her leg, an ulcer that continued to grow larger in spite of treatment, and which resisted bichloride of mercury. When I took hold of the case, I put her to bed, made her condition the best I could, continued the bichloride of mercury for ten days, and increased the strength of the solution until where the solution would run over the tissues the epithelium was taken off ; it blistered the skin readily. Of course, after the applications the case was bandaged in each instance, still the ulcer showed no signs of healing.

The suppuration upon the surface would stop for ten or twelve hours, but there was no diminution of the soreness in the tissues ; there was considerable hardness and inflammation all about the sore. Finding at this time that I could not control the ulcer with bichloride of mercury, I turned to a bottle of oil of cassia, took the cork and simply ran the end of it over the sore and bandaged it up. In twelve hours the soreness had disappeared and it commenced to heal after that one application.

Now, I have tried this over and over again in sores of this character which resist bichloride of mercury, and the oil of cassia will be successful. Take, for instance, the various forms of skin diseases ; they come to me every once in a while. There is no antiseptic that has such great power in their treatment as the oil of cassia, simply because the other antiseptics do not get into the tissues and do the work there ; they will sterilize the surface quicker than the oil of cassia will, but they do not get to the points within the tissues where we want them to act as the oil of cassia.

Another instance, in the treatment of a case of the same class of ulcers of which I have been speaking, my son concluded that he would not bother with bichloride of mercury any longer ; so he dropped some oil of cassia in the ulcer of a young man's leg, put a bandage around it, first covering it with a piece of adhesive plaster. The case was to report that afternoon, but did not report for forty-eight hours. A little too much oil was perhaps put on, for it ran

onto the healthy skin. At the end of forty-eight hours the serum had run down from the bandages into the shoe from a blister that had been formed. The oil of cassia will make a blister and draw more serum than any other vesicant I have tried, and makes a sore blister too. In order to produce this blister you put it onto the skin and confine it for a considerable time. If you put the oil of cassia in root canals which have a very large foramen and hold it against the tissues of the apical space, cover it loosely with gutta-percha so there is continual churning, you may get considerable soreness of the tooth, but ordinarily it will not produce soreness at all. We need to exercise care in the use of the oil of cassia.

A rather funny instance occurred in a case of mine a little while ago. I had treated a case of sycosis, where the hairy portion of the face was covered with pimples; it was one of the worse cases of barber's itch I have ever seen. There was a few spots on the back of the neck which I had overlooked. When I discharged the patient I gave him a little bottle of oil of cassia, and told him to touch any active spots that developed. Two or three days after, he came to me and said the back of his neck was in a terrible state, that it seemed to be worse. He had applied too much of the oil of cassia and made a blister nearly all over the back of his neck.

DR. CUSHING: Do you use the words disinfectant and antiseptic interchangeably?

DR. BLACK: Yes, I do so. The meaning of the words is so nearly the same that we may use them synonymously; but, as a matter of fact, there is a difference in the meaning of these words. Disinfectant is one that destroys infection; antiseptic is a little different. The word as it originally came up meant a medicine that would remove or neutralize the septic products. These words were made before we knew just what we wanted to say.

DR. NEWKIRK: I have had excellent results in my practice from the use of oil of cassia in cases of pyorrhœa. I use it in this way. For instance, we have a pocket containing pus, well up and down the root of a cuspid, such a case as I treated not long since; after removing the tartar or incrustation, as we always do, and thoroughly cleansing the part as thoroughly as possible with the peroxide of hydrogen, removing all of the products of the disease, I then insert a broach wrapped with cotton, which would pass to the end of each pocket and force up the oil of cassia to every point. I have found that a few trials of this sort in some of the

most obstinate cases have yielded very satisfactory results, and I have had perfect cures.

DR. ROHLAND: In what strength?

DR. NEWKIRK: I use it from the bottle. There is usually more or less fluid remaining from the use of the peroxide of hydrogen, and perhaps a little bleeding, so that there is a sufficient amount of dilution to avoid any harm from its use—at least, I have had none that I am aware of.

DR. BLACK: My rule is not to continue the oil of cassia very long, but use an essential oil that is not so irritating. I use, for instance, the oil of eucalyptus. While it is antiseptic, it is not so irritating.

DR. HARLAN: Cajuput will do just as well.

DR. BLACK: There are several oils which are less irritating than the oil of cassia. The oil of cassia is Chinese oil; it is sold in shops as the oil of cinnamon. The Ceylon oil is worth about \$2.00 per ounce.

DR. ROHLAND: I have heard objections made to the use of oil of cassia, cajuput, and the oil of eucalyptus on the ground that they stain the teeth; that they become, as it were, water soaked in appearance. I would like to know from those who have used them whether they have ever seen such effects. I have used the remedies and have never seen it. Can there be such a thing?

DR. TEMPLETON: I do not rise to discuss the paper; I do not consider myself competent to do so. It has been my pleasure to read one of the papers published by the author, and what I think you most need is to get this paper published as quick as possible, read it, read it again and again, and study it carefully. This paper in connection with the one read at Boston are worthy of perusal. This subject I have been trying to understand for quite a while. I think we should esteem it a great privilege to listen to such a paper as we have heard to-day, and if we study it in connection with the paper presented at Boston and which was published in the *Dental Cosmos*, we shall then be able to know what Dr. Harlan and Dr. Black have told us.

DR. HARLAN: I will only make a few remarks in closing. Dr. Black's remarks relative to the term infectious, infective, or poisonous, rather than septic, I consider well timed, although through different portions of the paper I used the words septic and poison-

ous interchangeably, and once or twice I used the word infectious when septic was meant. I recognize the difference between infectious or infective material and septic material, and it is because of the non-recognition of that by the profession that teeth have been bathed, soaked, washed and swabbed with carbolic acid, creosote, and chloride of zinc—agents of that kind, sealing these septic matters within the teeth, as Dr. Black has so forcibly remarked.

The point that Dr. Rohland brought out was spoken of here yesterday by a gentleman. The omission of any step in the process of disinfection of infected or poisoned dentine is a cause for failure ; so when the oil of cassia or cajuput is introduced into the crown of a tooth, when it is sought to disinfect that tooth, and saliva, mucus or anything else gets in, it is the saliva, mucus and other foreign matters that get in there that are decomposed and they cause the discoloration, and not the drugs.

These drugs will not discolor the teeth. They cannot. Water cannot get in there if you have first dried the tooth and then applied the oil. If the teeth discolor, the drugs must have been used improperly. Cosmoline will discolor a tooth, because it is not an oxygen carrier. All those agents that are carriers of oxygen, the older they get the more effective they are. If you go into a country drug store and use drugs that have been on the shelf for a long time, they are better than those which were imported last year. The bottle containing it has probably been opened forty times or more, and left open for days and every time it is left open it keeps storing up the oxygen. This is easily proved. You can prove it by the amount of iodine that will be liberated from iodide of potassium.

DR. E. NOYES: If the oil of cassia is exposed long enough will it thicken in the bottle?

DR. HARLAN: Yes. I have in my possession a specimen of oil of cassia that is about 11 years old; and also a specimen of oil of peppermint that is 19 years old. I have kept that for curiosity for exhibition to dental classes where I have been teaching.

A LANTERN VIEW OF PULP CHAMBERS AND CANALS, SHOWING TYPICAL FORMS AND SOME OF THE VARIATIONS.

BY D. M. CATTELL, D. D. S., OF CHICAGO.

What I have to show you to-night is the partial result of a study of tooth forms and pulp chambers and canals as suggested and urged by Dr. G. V. Black in a paper read before the Odontological Society of Chicago in June, 1888, and published later in THE DENTAL REVIEW of that year.

Out of several thousand silhouette pictures printed from actual cuttings of teeth exposing pulp chamber and canal or canals from different aspects of each denomination of the permanent set, I have grouped, for enlargement upon the screen, some seventy-five slides, each containing three prints, one representing the typical outline of pulp chamber and one or more canals, as the case may be, another representing one of the common forms found in practice, and the third showing either extra canals, malpositioned ones, or an anomaly of some character that would probably be difficult to treat and fill successfully should such an one be found in the mouth and recognized.

The three pictures shown together on a slide are all showings from the same aspect.

In each denomination I will show pictures of prints taken from four or five different aspects.

We will pass along from one set of pictures to another as rapidly as we can conveniently, merely pointing out as we proceed some of the interesting points, leaving the more particular discussion or enlargement upon different thoughts that the pictures may suggest to others.

The slides are all numbered, so if any one wishes to have a particular showing recalled it can readily be done by giving the proper number.

The helps in this particular study are few, literature being very scarce upon the subject. It was begun after examination of the drawings made by Carabelli, reproduced by Wortman with comments and published in the *American System of Dentistry*.

But it was soon found that many of the mentioned drawings did not agree with actual cuttings.

The only *reliable* work on the subject is the late publication of Dr. G. V. Black, on the *Anatomy of the Human Teeth*. Not only

is this special study fully treated of in his work but many closely allied ones.

We will now proceed with the photographic exhibit of the chambers and runways of the pulp nation, or the homes of the nerve tribe.



1
TYPICAL.



2
COMMON.



3
ANOMALOUS.

Slide A. Superior central incisors.



4
TYPICAL.



5
COMMON.



6
ANOMALOUS.

Slide B. Inferior central incisors.



7
TYPICAL.



8
COMMON.



9
ANOMALOUS.

Slide C. Inferior first bicuspid.



10
TYPICAL.



11
COMMON.



12
ANOMALOUS.

Slide D. Inferior first and second molars.

[Here were shown the pictures, (an idea of which the accompanying cuts will give) with running comments as the pictures passed in view. The last view thrown upon the screen was the portrait of Dr. Black, just as his name was mentioned for opening the discussion. The hearty round of applause which followed upon the coming into view of the doctor's portrait (so unexpectedly to him), was an indication of the esteem and respect felt for the man of science and research.]

The Stereopticon was ably managed by Dr. A. H. Peck.

DISCUSSION.

DR. BLACK: The subject that has been presented to us this evening, while it may be new in this phase, is not new to any of you in another phase. Most of you, I take it, have studied the pulp chamber more with a broach than with the eye, and when you come to study the pulp chambers of teeth with the eye, you will find that there are very many nooks and corners that your broach does not find, and it is largely for this reason that I have been induced to urge this form of study, grinding and recording by means of silhouette prints of the forms of pulp chambers and the forms of teeth. I have not been convinced that we cannot at all perfectly learn about pulp chambers by the use of the broach in our patients' mouths, but it is difficult to learn by the best broaches by this plan of study in the mouth alone.

Dr. Black then requested a few slides to be thrown upon the screen, which was done. He then called the attention of the society to the importance of this form of study.

EFFICIENCY AND SIMPLICITY IN REGULATING APPLIANCES.

BY E. H. ANGLE, D. D. S., MINNEAPOLIS, MINN.

Gentlemen:—The subject of orthodontia is a broad one. There are so many avenues of interest leading off from it that I am always perplexed where to begin and when to end. I have decided to deal with the most practical phase of the subject, believing you will derive more benefit than if I were to attempt some of the theoretical problems. I have therefore taken the topic of efficiency

and simplicity in regulating appliances. I do not know that I have ever heard of a paper headed with just these words efficiency and simplicity, yet in reality it is a very old and much worn title and justly so, for consciously or unconsciously it has always been and should be the aim of each one who has devised a regulating appliance to make it more efficient and simple than those already in use. I have said each one; I should modify that, for one or two who have written seem to have striven to gain the greatest amount of complexity instead of simplicity. The mechanical forces now recognized as best in the movement of malposed teeth are the screw, the spring of metals and often elastic or nonelastic ligatures as auxiliaries—forces which are very old and have long been used, and most that has been done by inventors of regulating appliances is to modify the application of these forces. These modifications have been largely in one particular, namely, anchorage.

It has been said that the inventions of the future will not consist of new discoveries so much as the new application of old principles.

A study of the literature shows that this is true of regulating appliances, and shows that many of them have been rediscovered many times.

A study of the evolution of regulating appliances would furnish us a subject for a very interesting and profitable evening, but time will not permit of further consideration. I shall invite you to consider with me this evening some appliances which are the result of much thought and direct practical experience in the treatment of cases in my own practice.

It was my practice for years when I devised a regulating appliance to see if there was not some part that could be dispensed with and the appliance rendered more simple and yet efficient. I soon found myself laying aside plates, incline plains and many of the complicated springs and coils and narrowing down to a few appliances which proved the most effective. After considerable experimenting as to sizes and form, my work finally crystallized into shape and I found that a very few forms of the screw, if made of the proper size and shape, might be easily adopted to almost any case. These screws, with a few auxiliary parts, I found to be sufficient for all my requirements and I finally assembled all the parts necessary for all ordinary cases under the name of set No. 1. They are few in number; they are simple; they are efficient. It has

been doubted by some that so few and simple a lot of appliances should be sufficient to meet the requirements of the apparently almost innumerable cases and kinds of irregularity. But malposed teeth are susceptible of classification for treatment into really simple classes, and the movements may be reduced to a limited number no matter how complexed the case may be, and I think I can convince you that different shapes or greater number of appliances would be entirely unnecessary. In order to make this point clear, I have selected cases which are most frequently met with, some of them being most complex.

I have had the models of my cases photographed, showing the conditions of the cases at the beginning of treatment, and when possible, the different stages, with the appliances in position until completed, a method which is far more truthful than fanciful, sketches or engravings which have been modified to suit the case.

I shall ask you to make allowances for any imperfections in these pictures, for it is my first attempt to illustrate my work by this method, and so far as I am able to inform myself, it is the first attempt of the kind before a body of dentists. These photographs and the slides from them, which will be shown upon the screen were prepared for me expressly for this meeting by Dr. W. J. Brady, of Minneapolis.

In nearly every case the slides were made from photos made direct from the plaster model, but in some few cases they have been made from engravings which are truthful, the model having been photographed directly upon the engraver's block.

To those of you who are familiar with my writings, some things will undoubtedly seem old, but I shall endeavor to throw new light on these apparently old thoughts.

I shall also show several other well-known appliances, not for the purpose of criticism, for it is not my intention here to criticise the work of others, but it is for the purpose of better illustrating the subject of efficiency and simplicity in regulating appliances.*

DISCUSSION.

DR. C. S. CASE: Before opening the discussion formally, I will pass around some models I have with me. They were shown in

* These are but the opening remarks of Dr. Angle. The lecture was profusely illustrated by lantern views of practical cases. [Publication Committee].

the clinic yesterday morning, but there are doubtless a number here who did not see them. I have brought them to the meeting to illustrate the value and effectiveness of a single simple device which has been the outgrowth of the Angle system of regulating appliances. It is designed to produce both a jack and traction force, and applicable where these forces are required side by side, enabling one to make them act in antagonism with no static anchorage. It is made by cutting a slot in the side of the tube of an ordinary Angle jack screw, and allowing the bar which lays within the tube to pass out through this slot and hook onto a tooth—say a lateral incisor which stands outside the arch—while the base of the jack screw or tube rests against an inlocked cuspid. Here you merely transfer the anchorage from one end of the bar to the other, making it pull in the lateral while the cuspid is being pushed to place. It will be necessary to stay the free end of the bar by passing loosely through a tube or short pipe appropriately attached to other teeth.

The models show how this part of the apparatus may be made effective by the use of nuts on either side of the pipe—in transferring the force at any time from either tooth which may have gained its proper position.

Dr. Angle has shown us a similar device which he makes by soldering to the tube of his jackscrew a short transverse pipe into which he hooks an extra traction bar.

The exhibition which he gave us last evening, with his very lucid description of his system of correcting irregularities of the teeth, was very interesting and instructive, and although I have used the system for the past two years in quite an extensive private and infirmary practice, I still find there is much to learn in a personal contact with Dr. Angle himself, and I feel that this part of your program alone has fully repaid me for attending your convention. Not that he has shown a great variety of new and startling devices, but rather because he has shown the value and effectiveness of these simple implements which he has already introduced to the profession in his published articles, and how they, if constructed and adjusted properly, can be made to perform almost if not every movement in the correction of irregularities of the teeth. To me this is of far more value than a whole volume describing hundreds of methods, appliances and their application, each one of which is peculiarly distinctive in character and construction; while many are applicable only to the particular case described, and

many more I am sorry to say, which fill the pages of recent publications—text-books and periodicals—are not worth the ink and paper which is used to publish them. It is no doubt true that the dental profession is as far behind in this department of dentistry as in any other; but I am glad to say, through the influence of such men as Drs. Angle, Farrar and others, we are on the eve of decided general advancement, which will make it unnecessary in the future, and I hope it will be unprofessional, to use many of the methods that have been almost universally employed in the past, and which, in my opinion, should now be decently and fittingly buried. I refer particularly to those methods which have for their base of anchorage any form of plate covering the mucous membrane of the mouth that cannot be removed and readjusted at will, by the patient. I refer also to a large proportion of those affairs which depend upon the elasticity of bands and springs. With the single exception of those cases where it is desirable to enlarge the arch by bending outward the alveolar ridge, a plate in the mouth for correcting irregularities of the teeth, in my estimation is not necessary, if excusable. In these instances I prefer the coffin split plate, which needs no description other than if constructed properly it may be removed and adjusted by the patient, and consequently can be kept perfectly cleansed. With few exceptions the only other instance in which continuous force, or the force which is obtained by the elasticity of material, is necessary, is in torsion, or the rotating of teeth upon their axes. Even here one may with a little ingenuity use that more desirable force which is obtained by the turning of a nut or screw at stated periods.

The principal objection to the continued force is that it cannot be kept within physiological bonds; and does not admit of periods of rest. This, it seems to me, is the very goal we should strive for in correcting malposed teeth, and what is meant when we speak of moving teeth in accordance with physiological requirements. From the inception of life throughout development to maturity, and the retrogression of age, every natural process in the organic economy consists in alternating periods of work and rest. Wherever this law is broken to any extent, disease, pain and pathological conditions ensue. With the invention of banding teeth—making it possible to attach thereto regulating appliances which can be worn with ease and comparative comfort from the beginning to the end of an operation, and with the application of the proper force in

quality and degree to bring them into accord with mechanical and physiological requirements—may be said to have commenced the renaissance in orthodontia, which is destined to perfect and broaden this department to a distinct and prominent specialty of dentistry.

It has been said that Dr. Angle has not invented anything specially new; be that true or false—and it probably is false—it matters little to us, and I ween even to him; for he has done more than that, showing the ability of a general rather than a private, when he has culled from the mass of heterogenous forces in the field a few of the most simple and effective, and brought them to their present state of perfection and applicability, that they fulfill every demand I am particularly forcible in regard to this matter at this time, because I have been recently told by men of the dental profession that if Dr. Angle would read much he would know he has nothing new. If there is anything that I despise it is an attempt by men to raise themselves by pulling down somebody else. We are aware he did not invent the principle of banding teeth for the attachment of regulating appliances; nor the screw, the tube, or nut; but he has originated special ways for using these simple things, from which he has developed a distinctively peculiar system for correcting irregularities of the teeth. There is no doubt about it. He did not invent German silver! but his application of the use of German silver for the construction of regulating appliances was as great a stride toward advancement in this department of dentistry as was the application of iron and steel rails to the railroading business. Nothing will compare with German silver for making a rigid tube or a pipe or holding thread upon a bar; and when used with a nut made of nickel, which he also introduced, you have an effective regulating appliance that is sufficiently strong, and one that can always be worked easily, while the slight exudation upon its surface of German silver can be easily removed with whiting. I usually have them gold plated at an expense of 40 or 50 cts a set.

I differ with Dr. Angle in regard to the method which he spoke of last evening of expanding the arch by a spring resting against the palatal surface of the tooth, believing that the Coffin plate is far preferable, because it grasps the entire ridge and teeth on either side, and by steady pressure upon this mass it bends outward the arch without any absorption or building up of tissues, whereas the pressure upon a tooth alone will move it through the process, by a retrograde metamorphosis of tissue.

His occipital appliance is exceedingly valuable, and in those cases where the jaws are V-shaped, and especially where there is room or space between the cuspids, bicuspid and molars, or spaces that can be made at that position, there is no doubt but that this force on the outside of the mouth is far preferable to using an anchorage on the inside of the mouth with its liability of changing occlusion of the molars. Under ordinary circumstances, however, I do not employ it. We have employed it at the college with quite marked success, but under ordinary circumstances I prefer a band extending from the molars and resting against the labio-buccal surfaces of the teeth, where it is possible to get a perfectly firm anchorage and no danger of changing the occlusion of the molars.

The method spoken of in rotating teeth by a spring, has not proven as successful in my hands as it has in Dr. Angle's; and I believe in the hands of students in college we should be exceedingly careful in its use. Unless I can see my patient every day and see that the end of the bar slips readily through the anchorage tube, I find the tendency is to throw the teeth outward, because if a flexible bar is bent the force is exerted to straighten or to restore it in position; but if one end of the bar can slip easily along its attachment, then of course the tooth at the other end, with a bar properly applied, will be rotated. But there are certain objections to this method. Take, for instance, a malposed lateral incisor with a bar bent down and extending through a tube on the side of a bicuspid or molar. You have considerable friction there because it is bent down into its place; and if there is sufficient friction in the tube to prevent the bar or spring from slipping along in the tube, there will be difficulty, and even if there is not the slightest friction at the anchorage tube, the tendency of the spring to straighten itself must always remain, with more or less influence to force the teeth outward. In my estimation there is a defect in the principle in any event; and a decided one if not carefully adjusted and watched, or unless other means are employed to prevent the rotating tooth from being carried outward along the line of the circumference of a circle whose center of axis is at the anchor end of the spring. This is the center of the axis of a spring, whereas the center of the axis should be in the center of the rotating tooth; consequently the nearer you approach the peripheral circumference of the tooth for torsion force you have arrived at a greater perfec-

tion for a rotator. Now let me make a suggestion; Solder a pipe longitudinally on the palatine side of the band of the lateral, and run a bar from it to a static anchorage.

This will allow the tooth to be rotated but not forced outward.

If the end of this bar is threaded and passed through an anchorage pipe (say on the molar) with a nut on each side of the pipe, and outward or inward force may be applied to the lateral while it is being rotated.

I also differ with Dr. Angle in regard to the manner in which his appliances are furnished to the profession, as he knows. I consider that a dentist who uses the Angle regulating appliances or a set of them as they are furnished is confined within narrow and prescribed limits, and so restricted in individuality and possibilities of design and invention that he will not make the best use of the system. Nor have I ever seen anything in print from the pen of Dr. Angle describing his method of making his appliances, and nothing, so far as I know, has been published in this regard but the description of a clinic which I gave before the First District Dental Society of New York City a year ago last January, and which was published in the April (1890) number of the *Cosmos*. I wish every graduate from our colleges could go out with a perfect knowledge of how to make all of these implements, from the making of steel drills and taps, the drawing of wire and tubing, to the final adjustment of the apparatus in practical cases.

Since the convention at New York I have given a clinic upon the construction of the Angle system of regulating appliances at almost every meeting I have attended. I happened to be without my apparatus or part of it, so I did not bring it along, else would have done the same here. I think after you have seen how easily these appliances are made you will not care to purchase more than the tools proper for making the implements yourselves. Not that I want to rob Dr. Angle of any of the substantial benefits of his work; I am simply saying what I believe to be true, for the benefit of the entire profession. And if there are men who have not the desire or the time to make the implements, it seems to me they should have the tools so that they can hand them to their assistants and instruct them how to make them under their supervision. Before attending that convention I obtained full permission of Dr. Angle to show his method of making the various appliances. Although Dr. Angle has

obtained several patents it has not been done to make money out of the profession, but for the purpose of protecting himself in his priority of invention, as would be natural for any man to desire. It is not particularly necessary that dentists should know how to make steel drills and taps or draw down the wire or make nuts. These can be made to exact sizes by the manufacturer, and furnished in any quantity. Let Dr. Angle regulate these sizes himself and furnish them in lots, so that dentists can purchase any quantity they desire at a reasonable cost; then the profession will make use of his very admirable system for correcting irregularities of the teeth.

DR. A. E. MATTESON: After listening to the able paper on regulating appliances by Dr. Angle and the opening remarks by Dr. Case, I will not detain you long by eulogizing the paper, as it speaks for itself. There are some thoughts which have occurred to me which have not been presented or touched upon by the essayist, and which I would like to comment upon.

In our text-books very little is said about the early age for correcting irregularities. Dr. Angle spoke of simplicity and utility in correcting irregularities with the least effort. I find that very many cases of irregular teeth can be readily corrected at an early age and done with great satisfaction and expeditiously from seven to eleven years. I do not hesitate to commence correction of the teeth at that age, provided I have firm deciduous teeth upon which to anchor my appliances. There are very many cases of twisted central and lateral incisors you can correct in a short time with little trouble and inconvenience to the patient at as early an age as seven years, even before the teeth have fairly erupted, and may be turned with a very slight pressure brought to bear upon them. As I said before, I wish the deciduous teeth for my point of anchorage. Many times where there is a tooth which is loose and is soon to be extracted, as the deciduous molar, I would not attach anything to that, but would take a molar out and utilize that if the bands embracing these two teeth are united together. It makes them more firm. I will say the same with the other teeth. With many appliances we use a single band on them, which draws in a forward direction.

I have some casts which will illustrate a very easy method of moving these teeth, and the pressure necessary is so slight that one would hardly think they could be corrected with so little effort

in so short a time. The spring I pass around is very flexible and moves easily. The tooth is brought forward and the retaining appliance rests upon the deciduous cuspid, and the same appliance is used for bringing the lateral incisor forward.

Dr. Case spoke of plates being removed by the patient. I am opposed to their use on that ground. I often find them come into my office with the plate in their pocket, and I have discontinued their use almost entirely, especially the use of rubber plates where they extend above the grinding surface of a tooth and prying the teeth apart, so that in anchoring a tooth would not interfere with the pipe.

Dr. Angle spoke of the use of German silver. German silver is like gold, except pure unalloyed gold, there are several varieties on the market. There are three or four formulæ for German silver. I would like to know which one he uses.

I have a little appliance here, the application of which I think is not new, for widening the arch. The steel tubes, which you see, are movable and can be carried forward or backward as the arch wants to be spread more in the rear or front. This is done by split tubing and pinched together as spoken of by Dr. Case. The spring which you see I could not attempt to use for this appliance. It may be necessary to use two, one to carry forward, and another in the roots. The steel appliance may be used for a retaining appliance by bending the wire around so as to fit inside of the teeth and putting against the ends and the sleeve of the tube passed forward to complete the joint. This can be used above and below and will readily suggest its different uses.

DR. E. K. BLAIR: I have a patient, a boy eight years old, who is extremely nervous. He has lost nearly all of his temporary teeth; the four first molars are not more than half erupted; he also has an upper and lower left central incisor, the upper central closes within the lower left central so much so that if I indicated the length of the teeth by my finger they would close like that (illustrating), the upper central turning in. What I wish to do is to open the mouth and bring the other tooth out.

DR. CASE: Any light pressure upon the upper tooth to push it out or to pull the central in on the lower, anchoring against the molars so as to push it in front of the inlock, would accomplish it.

DR. NEWKIRK: Some very interesting points were brought out by Dr. Angle, and one of the most important was that of sim-

plicity. This is what we are after. In a case like that which Dr. Angle threw upon the screen last night, where two lateral incisors are inside the arch and you wish to move them out, I thought an easier method could be applied. A light band may be placed on a bicuspid or molar on either side with hooks to hold the ends of a piece of piano wire. The ends of the wire should be bent at a right angle to prevent slipping forward, and the wire as a whole, perhaps not bent at all before insertion, but nearly straight. You may at the same time pull a bicuspid outward or regulate any of the forward teeth by rubber or thread, tying to the wire. I consider this a very effective way.

DR. BLACK: Why do you use piano wire? Why don't you use brass wire?

DR. NEWKIRK: Because I like piano wire better. There is nothing better in my judgment than No. 7 or 10 piano wire.

Sometimes we may better use the wedge principle. For example in such a case as I had not long ago, where an obstinate lateral incisor was in question, a wedge is a good thing. You band the teeth with a thin band of German silver or platinum carrying a gold bar, reaching from one to the other on the lingual aspect up against the face of the tooth, then you drive your wedge between the bar and the tooth. Here is your bar (illustrating), and there is your wedge; you begin to wedge from day to day with orange wood or pine. In a short time you have it in place, it is easily applied, and it is certain. Even with a strong screw you fail to make an impression.

DR. BLACK: In regard to plates, I avoid their use as much as practicable. Generally I do not use them. When I do use a plate my rule is to have it kept clean; I want the patient to come and see me every day, or twice a day if it is necessary, while it is being worn, and see that it is kept clean. I take it out of the patient's mouth myself and have it cleaned in the office and do not leave the cleaning to the patient until I have become acquainted with the habits of that patient. If I have trouble in the regulation of cases, it is due generally to the fact of allowing patients to manage the plates themselves; for that reason I do not make my plates so that patients can take them out. A great deal of damage may be done, as every one knows, by a foul plate in the mouth.

I have listened with a great deal of interest to what has been said on this subject, and I am personally much obliged to Dr.

Angle for the work he has done in simplifying the apparatus; but at the same time to the average practitioner there are many difficulties in regard to the use of these appliances that have to be overcome before that can be adopted. We want one a little different from the other to meet certain cases. The doctor has told us about taps; he has told us that the little pipes are bored out and made to fit. What proportion of dentists have a lathe in their office or laboratory? What proportion of dentists are skilled in the use of taps, screws, draw plates, etc.? Here comes in the difficulty. A man to handle them well and judiciously needs considerable experience.

It is not the convenience of these appliances so much as the skill in the working of metals that helps one. A man needs to be a fine brass worker in order to do this work as it should be done, and many are deterred on account of these difficulties. But I am glad that Dr. Angle has put his appliances on the market the way he has, so that they can be had. A more important thing is to make any of them the way we wish, and in the form we want them. Every man who regulates teeth extensively should be able to do this work. For a long time I have made my own jackscrews. I have to make my appliances to suit the particular case to be treated; and so with the other forms of fixtures. I use jackscrews over and over again. It strikes me there is a simpler method for rotating teeth, one that is more certain, but perhaps not quite as quick. For instance, we will suppose that this tooth is rotated like that (illustrating), and we want to bring it here—we want to straighten it up in the arch, perhaps there is no room for it to rotate, the interproximate spaces have closed, the proper points of contact have been locked in a wrong position. We bring the wire around the arch, pass it loosely through some of these little tubes which are attached to the teeth, it is not fastened, but simply slides through these borings, it is bent so that it lies easily in its position, but instead of being forward that way (illustrating), it slides back, touches the portion of the tooth most prominent and otherwise fits the arch, so that it is in a comfortable position. All we have to do is to put the rubber ligature on the tooth to be rotated, there is no room for the tooth in the arch, but it will wedge for a position and make its room. In a short time the pull brings it to its place in the arch, it lies against the wire, having gradually made its own space. That is all there is of it. If this tooth is out of position at

ing specific varieties of gum color with anything like reasonable certainty.

3. Firing.—If one may judge from the recent efforts to remove it, the greatest difficulty of all in the ordinary form of continuous gum work, has been the labor involved in the prolonged furnace work, a difficulty, however, which is very much greater to the occasional employer of the method than to the specialist.

Almost all the recent endeavors to extend the use of continuous gum work have been directed to the simplification of the furnace work, mainly, by the employment of gas in place of coal as a fuel. Verrier, Land, Parker, Stoddart, and more recently Ash, have done very much to extend the use of continuous gum work by their efforts to reduce the labor involved in firing with the coke furnace.

Despite the contention to the contrary by specialists, practical experience justifies me in maintaining that excellent continuous gum work may be done in a mixed gas and air furnace such as Verrier's.

Recently Messrs. Ash & Son have introduced an excellent continuous gum furnace to be used either with coal, gas and air supplied by a foot-blower, or for coal gas and compressed oxygen.

It is probable, however, that where a large amount of work has to be done, none of these appliances can replace the ordinary coke furnace. It is evident, therefore, that any reduction of the time and labor involved in the process of firing would be a distinct advantage. By directing my efforts to procure a tangible reduction of the vitrification point of the materials employed, I have found a new point of departure, which simplifies the process of continuous gum work, by removing the difficulties not under one but under all the three divisions mentioned.

This statement is far from comprehending all the difficulties or disadvantages which have been ascribed to the working of continuous gum, but if this summary is taken as a fair representation of the main difficulties, I shall ask your consideration, under the same heads, of the modifications possible and contrasting the relative advantages of a low as compared with the high fusing continuous gum.

1. Teeth.—It is at once evident that with a low fusing continuous gum, instead of special teeth being required, all teeth, plate, or vulcanite, English or American, are applicable. It is impossible to overestimate the magnitude of such a change, since in every well equipped dental laboratory will be found a fairly adequate selection

of teeth for ordinary cases, except perhaps where the greater resources of a dental depot are actually "next door." Further facilities of adaptation will be found in the possibility of utilizing for special cases, the old wooden pivot teeth and the modern porcelain crowns. The extraordinary rise in the price of platinum is certain to give a fresh impetus to the manufacture of teeth without platinum pins; some, indeed, have already appeared on the market and have been found quite suitable to the new method of continuous gum.

What is known as tube teeth work is not much known in America, but I venture to say that those American practitioners who have seen well executed samples of this kind of work will understand the predilections in its favor of the older practitioners in England.

Tube teeth in contradistinction to flat teeth may be described as somewhat conventional reproductions of the natural tooth forms with platinum tubes occupying the longitudinal and central axis of the crown. Tube teeth are especially applicable in cases where the teeth are required to fit the gum, and some the plate, or where all fit the plate, the latter being only applicable where the patient is not likely to show more than the crowns of the teeth.

The plates having been struck up and the teeth roughly fitted down, the places for the pins are ascertained by passing the wire tipped with vermilion down each tube, the teeth are thus removed from the plate, the holes carefully drilled at the points marked.

Appropriate lengths of gold wire (pin size) accurately corresponding to the tubes in the teeth are soldered in these holes. After this has been done, and the pins ascertained to be perfectly placed, they are fitted to the bite, the teeth are then "fine fitted" with the plate and finally the crowns are ground to a perfect articulation with their antagonists.

The tubes having been thoroughly cleansed and the pins on the plate roughened, the teeth are finally cemented to the plate by means of powdered brimstone, melted and flowed between the tube and the pin. On cooling, the teeth will be found to be thoroughly secured.

The process of "fine fitting" occupies even in the hands of the expert the major part of the time of manufacture of a tube tooth case.

By making the plate and pins in platinum instead of gold and applying the low fusing continuous gum, no "fine fitting" of the tooth is necessary, except where the teeth impinge directly upon

stimulating each and every one to work a little harder in this very interesting, very important, and much slighted branch of dentistry.

Dr. Case seems to have misunderstood me in regard to adopting set schemes, or the combinations, as I prefer to call them, in the use of my appliances in different cases. I would not have it understood that I would restrict any man in adhering to any one form (in this or any branch of dentistry). Probably no man can do his best unless he acts his own individuality. What I desired to bring out from beginning to end is to reduce these appliances (and their applications) to the simplest possible number, so we can teach orthodontia to students in such a manner that they can comprehend it. It is not necessary to have an enormous mass and combination of principles and appliances. I have sought to accomplish the six movements of the teeth, to make this plain in all my writings and descriptions on the subject. Many others have tried to do, so it would seem, the opposite, one author alone boasting of over 600 combinations and appliances. If you can find a certain way of doing a certain thing that is effective in a stated case or cases with slight modification, of what use is it to resort to so many combinations to accomplish the result. I have sought simplicity in my appliances and I try to get along with the fewest possible number that would do the work. Dr. Case has shown you the manner of rotation by a screw and by band. It is effective, it is a splendid way of performing rotation, but I think the lever is the best principle for rotating after all. It always has and always will be in mechanics and if you learn to apply it as you should, it is easier of application than a screw. I could illustrate many different ways of rotating. But the lines, plain and simple, is I think, enough, for it is simple and efficient. I think if you keep to the smallest number and become familiar with them you can do better work than with a larger number. By using a large variety of pluggers or excavators of different forms, sizes and shapes you never get to be fine operators. I think I can safely say that the longer you operate and the more skillful you become in operating the less are the number of pluggers used. You become well accustomed to a few simple forms and knowing these forms thoroughly is one reason why you become skillful in operating. The same is true of regulating appliances. The number of appliances and modifications which I have given here, after testing them many, many times, are best for me, yet they may not be so for you.

Dr. Case has shown us several very ingenious combinations in the use of these appliances, and I have not the least doubt but *he* can do better work with them by reason of his familiarity than those combinations which I have given for the same class of cases, and others I have no doubt may find ways of using these appliances better suited for them. But one thing of which I am very certain—no matter how much you vary the combination in the application of these appliances you should not alter the shape, size and proportion of the appliances themselves for they are correct. And it is the first time the screw has ever been systematically shaped and classed for universal application, for out of the limitless number of appliances shown in our literature in which the screw plays a part, in not a single instance are the parts interchangeable, with the rare exception of the old fashioned jackscrew, which were so exceedingly limited in their application.

The peculiar shapes, sizes and proportions of these screws and their attachments have cost me much time and experimenting, and I am not more certain of any one thing in dentistry than I am that they are correct and their form should be maintained, and those of you who prefer making your appliances to buying them, should, adhere strictly to the forms, proportions and temper of the metals used, as I have given them.

Now in regard to making these appliances I have not the least objection that each dentist should make his own appliances, providing the manufacture is limited to the number he may use in his own practice. Yet I am well convinced if you make the appliances as carefully and accurately as those which are on the market, they will in many instances cost you much more than if purchased. For unless each pipe is turned, polished and bored to accurately fit the parts passing through them, and each screw so tempered as to give the greatest strength. You cannot hope for the best results in their use. If all dentists were as ingenious and could work as fine as Dr. Case there would not be the least trouble in each one making his own, providing he had the time, but unfortunately that class of men are not so common. I have had considerable experience in making them and having them made for me. And I know that it is exceedingly difficult to get workmen who are skillful enough to make the appliances as they should be.

I have tried the finest mechanics in Minneapolis and St. Paul and some of the Eastern cities; I have had at least fifteen jewelers

make certain parts for me, and with all that I have only been able to get two men to make the appliances so that I could produce the best results with them.

Dr. Newkirk's appliance shown on the board here is very effective; it is one of the old principles of the spring and lever. It has been used a great many years and probably always will be used in certain cases where teeth are easily moved; but it seems to me it is a great waste of time, and in difficult cases, in patients 22 or 23 years old, to use such an appliance; you have got to have something stronger. I would suggest that instead of having a hook you use one of the little pipes I have shown; they will prevent it from slipping on the lip or cutting edge and keep your ligatures in place.

Before closing, I want to say to you that in behalf of the Minnesota State Dental Society, and in accordance with the instructions of our president, I extend to you an invitation to meet with us this summer at St. Paul on the 8th, 9th and 10th of July. We would like to have you come and get acquainted with the dentists of the Northwest.

THE ARCHITECTURE OF THE UPPER FIRST-MOLAR.

BY ALTON H. THOMPSON, D. D. S., TOPEKA, KANSAS.

Architecture, according to eminent authorities, (1) "Is the art of building according to principles which are determined, not only by the ends the edifice is intended to serve, but by considerations of beauty and harmony. The use of architecture, as an art, is to so arrange the plan, masses and enrichments of a structure as to impart to it interest, beauty, grandeur, unity and power. * * * Vitruvius, an ancient writer on architecture, lays down three qualities as indispensable in a fine building, viz. * * * stability, utility, and beauty. The qualities in the general disposition of the parts of a building which are calculated to give pleasure to the beholder are proportion, harmony and symmetry. Proportion itself depends essentially upon the employment of mathematical ratios in the dimensions of a building. No defect is more glaring or repellant than want of proportion. By harmony is meant the general balancing of the several parts of the design. It is proportion applied to the mutual relation of the details. * * * Due attention to proportion and harmony

gives the appearance of stability and repose which are indispensable to a really fine effect in a building, and symmetry is that uniformity in plan and structure which is indispensable to effectiveness."

In applying these rules to the study of our subject we find that the outlines of the crown of the upper first-molar present to the eye the first requirement of proportion, *i. e.*, mathematical ratio—its general form being mathematically perfect.

Our author says further: "It is a curious but significant fact that proportions such as those of an exact cube, or of two cubes placed side by side—dimensions increasing by one-half—or the ratios of the base, perpendicular, or the hypotenuse of a right angle triangle—please the eye more than dimensions taken at random." We observe that the crown of this tooth is a mathematical form—a cube—when perfect and symmetrical, which gives the eye the form of beauty, and is therefore pleasing. It is in fact more suggestive of symmetry than any other tooth, and this is carried out in the harmony of the design. "The balancing of the several parts which is proportion applied to the mutual relation of details. * * * Thus, supported parts should have adequate ratio to their supports." But in regard to this law this tooth is not quite perfect, as the three roots do not have an exact and mathematical relation to the four cusps of the crown. The lower molar is more perfect in regard to this law of symmetry and the appearance of adequate support, for it has four roots—or two double roots—which support the four cusps. But when there is a fifth cusp or cingulum added, the symmetry is again broken. The second molar is more perfect in this relation—as the four cusps are quite constant—but its crown is not symmetrical.

So it is that the upper molar lacks from an architectural standpoint, the harmony of adequate support. This is corrected, however, in the tricuspid molar, but in that form the general symmetry is impaired and the cube destroyed, and the pleasing outlines of the cubical crown are absent. It is the cube-shaped crown that is perfect in form, although it is imperfect in its support.

This cube is strengthened in an architectural view, and embellished as well, by the embattlements of cusps and ridges which mark its grinding face. The angles are rounded off and toned down of course, so that the corners and points are not acute, but the top or face of the cube is peculiarly sculptured by the modification of form which adapts it to the purposes of its office, and the eminences

and depressions presented are of typical form. These mouldings may be considered in the light of ornaments, for a perfectly formed tooth is indeed a pleasing object, as its face presents the lines of beauty. These are also lines of force and lines of support—pillars and columns, arches, girders, etc.—which can be traced, and which contribute to the mechanical strength of the tooth.

The mechanical force of an implanted tooth is entirely static. It does not move of itself except as the jaw, its support, moves and carries it, and its office is therefore one of resistance only. It is scarcely possible to follow out the law of kinetics and statics in the elucidation of this subject, or to figure out algebraically the center of inertia, the direction of parallel lines of force, of impact, of direct and indirect pressure and their various effects in regard to the resisting force of the crown. This has much to do with the mechanical evolution of the tooth, however, as we shall presently show; and the form of the tooth for mechanical resistance is carefully constructed.

We notice first that the three primary cones of which the crown is formed are the chief pillars of resistance. All teeth are formed upon and from the mechanical principle of a single cone, or combinations of cones. Thus the incisor is modified from a single cone, the base being compressed to form the cutting edge. The canine is a single cone with the crown formed by a trihedral compression of the base; the bicuspid is formed by the fusion of two cones; the upper molar is composed of three cones, the lower molar of four cones, and so on.

The upper molar is formed primarily of three cones, modified into the three roots and the three primary cusps, *i. e.*, the two buccal cusps and the antero-lingual cusp. The postero-lingual cusp is a graft—an extra, supplemented cusp—the tricuspid crown being the primitive form. In its full, beautiful, cubic form, however, there are four cusps, which form the resisting ends the caps of the four corner columns of the crown edifice. These four pillars from the corners of the cube, and are connected with each other by the large and strong marginal ridges, which act as arches and also as braces and girders. The triangular ridges act as abutments bracing the corner pillars and the oblique ridge acts as a cross girder binding obliquely the antero-lingual pillar-cap to the postero-buccal. The oblique ridge is probably developed from one of the marginal ridges of the tricuspid molar. It is to be ob-

served that the last, the superadded fourth cusp, is the one that is weakest and most inconstant, and when the tooth is reduced, is the first to fall. A still later addition is the lingual cusp, another supplementary cusp, an apparent attempt to reproduce the multi-cuspid form of some lower animals, like the insectivorous molar. Sometimes it is developed into a fifth cusp of full size, but this is rare and is a departure from the normal form in man. These extra cusps are not relevant to the ordinary mechanical form of the first upper molar, the pure cube, which is produced by the addition only of the fourth cusp in the evolution of the typical form. Extra cusps tend to produce the rhomboid form of crown, which is not pure, owing to the extension of one or more corners, and consequent assymetry. The pure cube with the four corner pillars, four connecting marginal ridges, the oblique ridge or girder, etc., is the ideal form for this tooth.

The next branch of our subject is the mechanical genesis of tooth form, as applied to the study of the first upper molar. This is an important as well as an interesting branch of odontography. The embryology of the tooth is an important study but back of that is the force which dictates tooth-form during development. Tooth-form arises at the behest of type, and type arises from the impulse of the mechanical purpose for which the tooth was created. Type becomes established by generations of special use, during which a particular form arises and becomes hereditary. Special use dictates form, the type becomes established, and hereditary impulse ensures its transmission. A certain form of tooth arises on demand for a certain purpose and becomes specialized to perform that work.

We are far past the day when the theory prevailed that organic beings were created at a stroke in complete form, and that their environments were then made to order to fit them. We now know that an organism is evolved to fit its environment; and as the latter changes and new conditions arise, the organism changes accordingly.

By this law of adaptation, great modifications and differentiations of structure have been brought about; and we now know also that tooth-forms have originated and developed in obedience to the demands of food environments. As new foods were presented, new forms arose to manipulate those foods and prepare them for the physiological use of the animal. From this we know that the

origin and evolution of tooth-forms is strictly mechanical. It is the doctrine of "mechanical dental differentiation" of Ryder and Cope, who are the great authorities on the subject of the mechanical evolution of tooth-forms. We need scarcely call attention to the simplest forms of teeth with which we are familiar, *i. e.*, the incisors for cutting, the canines for tearing, the bicuspidis for crushing, the molars for grinding, etc., but these illustrate the mechanical offices of the teeth. The more complicated forms of teeth in different animals illustrate further the mechanical evolution of tooth forms for the different purposes for which they are adapted.

Dr. C. N. Pierce some time since called the attention of the dental profession to the writings of Dr. John Ryder upon this subject. (2) Reviewing Dr. Ryder's paper. (3) "On the Mechanical Genesis of Tooth-forms." Dr. Ryder says "A portion of the complex interrelations of the parts of organic beings, show that their metamorphoses may be effected by mechanical means. * * * When the various groups of animals are considered the evident modification of certain parts, resulting in their specialization, is so apparent that to deny the agency of strains as a very potent cause, is simply to ignore the plainest principles of physical development." These principles are applied to the study of the evolution of tooth forms, which arise in obedience to special demands by pressures and strains in different directions during long periods of time, and which cause development in particular directions in response to the demand.

Ryder says again "It is by the duplication of tubercles in various directions, their fusion, enlargement or reduction and total suppression that the various types of teeth and masticating apparatus seem to have arisen. There is constant reversal of the forms of the tubercles in opposite molar series, and the reversal of the plan of the foldings as though forced into those shapes by some force always acting in a definite direction. The fact that the component cusps of the molars of almost all rodents are compressed transversely and those of the ruminants longitudinally, as though pressures operating in those respectively opposite lines of mandibular movement had induced the compression, is strong presumptive evidence in favor of the doctrine of the plasticity of dental structures. The evidence is most striking in the gradual derivation of the crescentoid type of cusp, apparently from the conical type as illustrated

in a long series of certain fossil forms, by slight but continual pressure in a given direction through long periods of time."

Dr. Ryder next describes the varieties of mandibular movements, which he demonstrates is the prime cause of the change of tooth forms which are related as cause to effect. He observed "that there were several distinct kinds of mandibular movement, each kind corresponding to some very distinct type of tooth." These movements are thus epitomized by Dr. Pierce in his review, (2) "In the *Carnivora* and *Omnivora* the jaws are simply opened and closed during mastication without lateral movement; in the *Herbivora* the jaws perform extensive lateral excursions in mastication, in accordance with the requirements of vegetable foods which demand much comminution. In the *Rodentia* and *Proboscidae*, the mandible is moved backward and forward."

These various movements are all accompanied by particular forms of molars which have arisen from the pressure and strains of the movements in different and definite directions during the act of mastication. Thus the *Carnivora* with vertically closing jaws, have a constant type of tooth, with short roots and conical tubercles, the *Bunodont* type. In the *Herbivora* with extensive lateral movements, the molar cusps are crescentic and flattened, and the teeth are long rooted, the *Selenodont* type. There is not vertical articulation as in the *Carnivora*, as the upper teeth close over the lower, externally. In the rodents and *Proboscidae*, with antero-posterior movement the tubercles form flattened transverse ridges made of elongated laminae of enamel, surrounded by dentine and cementum. The force direction is mostly vertical and the duplication of cusps is apparently merely for the purpose of increasing the masticating area. Man being an Omnivorous animal, has, like the carnivorous animals, mainly a vertical closure of the jaws. He has little lateral or backward and forward movement of the mandible. These limited movements, however, may exert a great deal of force when employed in the reduction of some kinds of foods, but of this we are not certain. The main office of the blunt cusped molar is merely crushing, so there is much doubt as to the real amount of force exerted by the lateral movements, and consequently of the influence of their pressure in various directions, but whatever it is it has been sufficient to form the grinding teeth of man through the long periods of his ancestry.

Dr. Ryder summarizes his conclusions thus: "The earliest

and simplest type of mammalian jaw movement was that in which the mouth was simply opened and closed, without mandibular excursion, and with the simple haplodont or bunodont molar. As the excursive movements increased in complexity, there has been apparent increase in the complexity of the enamel foldings, ridges and crests, and these have been modified in conformity to the ways in which the forces of mastication have been executed, and the crests coincide with the arc of the sweep of the mandible."

A curious fact brought out by these studies was that the molar of man is a simple and early form of tooth, and that, being an omnivorous molar, it is not highly specialized. It is not as highly developed, for instance, as the carnivorous, the long bladed molar, or as the herbivorous molar with its complex foldings. As Prof. E. D. Cope says, (4) "In the Quadrumanous families, including man, the primitive quadratuberculate type of molar is preserved. The human series possesses in its detention more of the primitive, bunodont form, than any other mammals of this line. It also exhibits a retrogression in the transition from some ancient forms to the genus homo, where the teeth in the two jaws are exactly alike, as well as in the resumption of the continuity of the dental series after the diastema had prevailed among the higher monkeys." Many other animals proceeded further in different directions, and developed complex grinding teeth which are highly specialized and adapted to limited and special offices. Man's grinders remain much what they were in the earliest forms of teeth, and hence are very interesting survivals.

Reference has been made to the evolution of tooth-forms from the simple cone. Cope remarks "that transition from simple to complex teeth is accomplished by repetition of the former in different directions. Thus, some animals have simple cylindric incisors, then these are flattened; then grooved in the fang and then two-rooted. This is the result of antero-posterior repetitive acceleration of the simple cylindric dental type.

Another mode of dental complication is by lateral repetition. Thus the internal heel of the superior sectorial tooth of a carnivore is supported by a fang along side of the usual posterior support of a premolar, and is the result of repetitive effort of growth-force in a transverse direction. More complex teeth, as the tubercular molars, merely exhibit an additional lateral repetition, and sometimes additional longitudinal ones. As is well known, the four

cusps of the human molar commence as separated knobs on the primitive dental papilla. Accordingly the simple tubercle may be regarded as the least specialized form of tooth. It may be low and obtuse; or more elevated or conic; or truncate. They may be complicated, either by folding of the sides, or by the development of tubercles on the crown, as in man. Carried further the more complex teeth of the ruminants and rodents are constructed from the same basis. * * As is well known, the crowns of the superior molars of the higher mammalia are supported on three roots, two external and one internal. The lower molar has two roots and is therefore less complex, but supports four cusps, while the roots of the upper molars support directly but one each. In mammalia with but three tubercles, as the carnivora, the inner root has much the form of the external ones. In many of those with four tubercles, as the quadrumana and man, the fang of the internal root is not modified, but those animals in which the tooth is still further specialized, it is much changed by grooving or even bifurcation. This tritubercular molar is found in the lemurs, and Prof. Cope has elsewhere shown (5) that it is often found in man, especially in the Latin races. The tricuspid molar is thus a very early form and marks retrogression in the human dentition, of a very remarkable kind. It is in fact, a reappearance of the lemur form from out the line of man's ancestry, and it means degradation of the type and incompleteness of the tooth. The quadricuspid form, the perfect cube, is the perfect form of the upper molar in man and is typical of the highest development in our species. This is developed from the tricuspid form by the addition of the posterio-lingual cusp. This is the form we have endeavored to study in its perfection, but it is found only in the strongest organizations in the higher races, or in strong low races, and in the *anthropoidea*. It is the architecture of this perfect, typical form of molar that we wish to describe, and the path of the development of the perfect type, that we have endeavored to follow.

Dr. G. V. Black says in his excellent memoir (6), that "the articulating surface of the upper first molar has four marginal ridges, broken by grooves which outline the four lobes, or four principal eminences or cusps." The marginal ridges are somewhat irregular in outline but have a distinct relationship to the architectural form and mechanical support of the tooth. The perfect molar crown is more symmetrical than most authors will allow, but this symmetrical

form is rare, and is not found in those crowns that are imperfect and immature and that occur most frequently under our observation in practice. The marginal ridges are strong connecting arches, double arches, perhaps, on the buccal and lingual edges, but single strong arches on the mesial and distal margins. The "bucco-marginal ridge rises in a curved line to the summit of the mesio-buccal cusp, from which it descends distally to the buccal groove. From the summit of this cusp the mesio-buccal triangular ridge descends. From the buccal groove the marginal ridge rises to the summit of the disto-buccal cusp, then descends on a curve to the disto-marginal ridge. From the point of the disto-buccal triangular ridge runs down to the central pit, where it joins the triangular ridge from the mesio-lingual cusp to form the oblique ridge. The disto-lingual marginal ridge rises in a curve to the summit of the disto-lingual cusp, and descends in a curve to the lingual groove. It then rises to the mesio-lingual cusp and descends to the mesial ridge. The mesial marginal ridge is a strong band of enamel connecting the two mesial cusps, and the distal marginal ridge connects the distal cusps. The lingual and buccal surfaces are divided perpendicularly by vertical lines or grooves, marking them off into anterior and posterior lobes." These areas are related to the columns of the corners, of which they are a part, architecturally. These pillars, we wish to notice, are impressively proportioned; for, as Mr. Ruskin says (7), "When a column is of great thickness in proportion to its height, it is the best of all, having a strange dignity in its excessive simplicity," the rounding out into the lobes giving this apparent thickness to the corner columns.

We notice, again, that the cusps, with the marginal ridges or arches and the triangular ridges abutting against them, just described, represent the capitals of the columns. Ruskin again says, that "the cornice of the wall being cut to pieces and gathered, forms the capitals of columns, passing through a course of transformation." The marginal ridges might be compared to the cornice, gathered together to form the cusp or capital. "The capital is the hand of the pillar, to hold up, the base is the foot to stand. A square board for tile laid upon the top of the capital is the *abacus*, to support the load above. Then there is the conical-shaped stone beneath the abacus to support its outer edge, this is the bell." These are the germs, the elements of the capital, to which the marginal and triangular ridges may be likened. The next element

to study is the arch. "The next question is to connect these points or tops of shafts with each other so as to lay on them a continuous roof. This is accomplished by the lintel, the gable or the arch." The arch is the strongest as well as the most artistic support. "The arch line is the curve of the arch, and is the line of greatest resistance. This varies, however, with the change and place of the weight above the arch, and it is only the apparent arch line that" is constant. The marginal ridges connecting the cusps may be compared to arches resting against the caps of the corner pillars of the architectural form of the tooth. These arches are of the order of the low ellipse which Ruskin describes as being strong and graceful, and they certainly add to the strength and beauty of the tooth. The oblique ridge has been compared to a girder, connecting the cusps obliquely, with the triangular ridges of the other cusps resting against it. The four triangular ridges running to the center of the grinding face may be compared, again, to half arches supporting a roof vault, the cusps of the four arches coalescing in the center of the vault. Again, the triangular ridges may be compared to buttresses resting against the columns to brace and support them; and perhaps other architectural resemblances could be worked out in such a study.

The application of these studies in practice is at once apparent. In order to fill a cavity properly, or construct a crown, or place teeth on a bridge or plate, it is absolutely necessary that we should possess a good knowledge of the anatomy, artistic form, and the mechanics and philosophy of tooth form. In building a single crown or in constructing a denture, respect must be had for utility, stability and beauty. Correct knowledge cannot be obtained by the old fashioned methods of generalized descriptions of tooth forms, but study and descriptions must be minute and philosophic. In these days of extensive restorations of tooth forms, of prosthesis of the single crown by elaborate methods, the study of the superficies of the teeth and their microscopic anatomy, becomes a necessity for the perfect artistic and mechanical construction of artificial tooth crowns. When a lower molar face is used for an upper molar, or vice versa, it betrays a plentiful lack of knowledge of dental anatomy, and yet such exhibitions are not uncommon, but are worthy only of the dark ages of dentistry. Not only should the right articulating face be used in the proper place, but the special form of such face, its adaptation to the articulation, the form of the

crown, the neck, the position of the crown in relation to the arch, the mechanical purpose of the tooth, the esthetic duty of the tooth, etc., must all be regarded that the highest purposes of utility, stability and beauty may be subserved.

Of course, in practice we can only aim at an ideal, a form of perfection, but the ideal should be clearly defined and well understood. This ideal we must sacredly uphold and conserve, even though we crucify it daily in practice, on the cross of our finite abilities. Yet again we must uplift it and be constant in our fidelity to our ideal, and it will encourage us and lead us on to the accomplishment of better things.

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ON THE RELATIVE ADVANTAGES OF A LOW FUSING CONTINUOUS GUM.

By GEO. CUNNINGHAM, M. A. (Cantab.), D. M. D. (Harvard).

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Mr. President and Gentlemen:

It is not without some feelings of trepidation that I submit to such a distinguished audience of American Dentists as the Illinois State Dental Society, which includes amongst its members specialists whose artistic productions in continuous gum have procured for them repute of more than local character, the results of my endeavors to simplify a process which has excited the admiration if not the aspirations of almost all of us at one part or another of our professional careers.

I would especially claim unprejudiced criticism at the hands of the specialists, since I make no claim that the results of the new process are superior to continuous gum work as executed at present by the expert; indeed I would be more than satisfied if in time the practical results should prove as good.

Every dentist will admit that the nearest approach to a perfect

substitute for the natural teeth is a well made and properly adapted artificial denture of enameled platinum.

It is a sufficiently curious fact that the most artistic achievements of the mechanical laboratory, which has made the honored name of John Allen one of world-wide celebrity, is as far from being a part of the every day practice of the ordinary dental laboratory as it was on its introduction some forty years ago. This result does not arise, at any rate, entirely, from any lack of artistic aspirations within the dental profession, since the sectional gum blocks of the American and the improved pink rubbers of the European manufacture may be regarded as efforts to meet the not yet wholly satisfied artistic feelings of the dental mechanician.

The artistic productions of a generation of experts have proved that continuous gum work has not failed to be more generally adopted by the profession, from any intrinsic failings of its own, but rather from the extrinsic difficulties incidental to its production. These difficulties may be summed up under three heads.

1. Teeth; 2, Material; 3, Firing.

1. Teeth.—It must be a decided drawback to a process when as in ordinary continuous gum special teeth are requisite for the process, unless these are also applicable to the commoner methods of the dental laboratory. Relatively few dentists seem to have been alive to the fact that continuous gum teeth are capable of being mounted into a vulcanite denture with more artistic effect than the ordinary flat rubber teeth. As a matter of fact, a proper selection as to shape, size and color is not found in the average dental laboratory, nor even in the most important dental depots, at any rate on this side of the Atlantic. It is surely obvious, therefore, that the process would be more generally employed if it were capable of being applied to the ordinary kinds of teeth, of which a fair if not adequate selection is to be found in the laboratory of most dentists and certainly in most dental depots.

2. Materials.—While no complaint, I think, can be advanced as to the quality of the gum body, I know that my own experience as to the frequent defects of the gum enamels, is corroborated by others. One of two cases successfully carried to the biscuiting stage and then turning out a muddy brown or exceedingly crazed, are sufficient to extinguish forever the ardor of the occasional continuous gum worker.

A further difficulty with regard to materials is that of obtain-

ing specific varieties of gum color with anything like reasonable certainty.

3. Firing.—If one may judge from the recent efforts to remove it, the greatest difficulty of all in the ordinary form of continuous gum work, has been the labor involved in the prolonged furnace work, a difficulty, however, which is very much greater to the occasional employer of the method than to the specialist.

Almost all the recent endeavors to extend the use of continuous gum work have been directed to the simplification of the furnace work, mainly, by the employment of gas in place of coal as a fuel. Verrier, Land, Parker, Stoddart, and more recently Ash, have done very much to extend the use of continuous gum work by their efforts to reduce the labor involved in firing with the coke furnace.

Despite the contention to the contrary by specialists, practical experience justifies me in maintaining that excellent continuous gum work may be done in a mixed gas and air furnace such as Verrier's.

Recently Messrs. Ash & Son have introduced an excellent continuous gum furnace to be used either with coal, gas and air supplied by a foot-blower, or for coal gas and compressed oxygen.

It is probable, however, that where a large amount of work has to be done, none of these appliances can replace the ordinary coke furnace. It is evident, therefore, that any reduction of the time and labor involved in the process of firing would be a distinct advantage. By directing my efforts to procure a tangible reduction of the vitrification point of the materials employed, I have found a new point of departure, which simplifies the process of continuous gum work, by removing the difficulties not under one but under all the three divisions mentioned.

This statement is far from comprehending all the difficulties or disadvantages which have been ascribed to the working of continuous gum, but if this summary is taken as a fair representation of the main difficulties, I shall ask your consideration, under the same heads, of the modifications possible and contrasting the relative advantages of a low as compared with the high fusing continuous gum.

1. Teeth.—It is at once evident that with a low fusing continuous gum, instead of special teeth being required, all teeth, plate, or vulcanite, English or American, are applicable. It is impossible to overestimate the magnitude of such a change, since in every well equipped dental laboratory will be found a fairly adequate selection

of teeth for ordinary cases, except perhaps where the greater resources of a dental depot are actually "next door." Further facilities of adaptation will be found in the possibility of utilizing for special cases, the old wooden pivot teeth and the modern porcelain crowns. The extraordinary rise in the price of platinum is certain to give a fresh impetus to the manufacture of teeth without platinum pins; some, indeed, have already appeared on the market and have been found quite suitable to the new method of continuous gum.

What is known as tube teeth work is not much known in America, but I venture to say that those American practitioners who have seen well executed samples of this kind of work will understand the predilections in its favor of the older practitioners in England.

Tube teeth in contradistinction to flat teeth may be described as somewhat conventional reproductions of the natural tooth forms with platinum tubes occupying the longitudinal and central axis of the crown. Tube teeth are especially applicable in cases where the teeth are required to fit the gum, and some the plate, or where all fit the plate, the latter being only applicable where the patient is not likely to show more than the crowns of the teeth.

The plates having been struck up and the teeth roughly fitted down, the places for the pins are ascertained by passing the wire tipped with vermilion down each tube, the teeth are thus removed from the plate, the holes carefully drilled at the points marked.

Appropriate lengths of gold wire (pin size) accurately corresponding to the tubes in the teeth are soldered in these holes. After this has been done, and the pins ascertained to be perfectly placed, they are fitted to the bite, the teeth are then "fine fitted" with the plate and finally the crowns are ground to a perfect articulation with their antagonists.

The tubes having been thoroughly cleansed and the pins on the plate roughened, the teeth are finally cemented to the plate by means of powdered brimstone, melted and flowed between the tube and the pin. On cooling, the teeth will be found to be thoroughly secured.

The process of "fine fitting" occupies even in the hands of the expert the major part of the time of manufacture of a tube tooth case.

By making the plate and pins in platinum instead of gold and applying the low fusing continuous gum, no "fine fitting" of the tooth is necessary, except where the teeth impinge directly upon

the gum. The general excellence of ordinary tube work is further improved by the filling up of all the spaces where the food might lodge, without impairing in any way the utility and strength of the older method. While in those cases where the gum is much absorbed, the addition of the gum enamel is a great advance on the often unsightly long rooted tube teeth.

I have worn a partial lower case (lower bicuspid and molars on each side) for about a year with perfect satisfaction. From my own experience and from several other practical cases, I am confident as to the practical results of the new method, when applied to tube teeth work.

If the process were at all generally adopted it would probably be followed by the introduction of a new and improved form of tube teeth without the platinum tube, which is rather a disadvantage than otherwise for our purpose, or by a solid crown with a simple slot on its palatal surface, the slot to fit on tiny hold-fasts of sheet metal soldered to the plate, thus somewhat simplifying the delicate process of mounting the pins for tube teeth.

It often occurs that one has a tooth of the requisite size and form but altogether inadequate in color for the required case, my present line of experiments is being largely directed to producing a series of vitrifiable tooth colors by which one will be able to modify the coloring of any tooth to suit the requirements of a special case. The initial experiments have been quite successful but it will be some time before I shall be able to produce all the varieties of coloring necessary for this purpose. Such an adjunct to the resources of the laboratory would not only tend to increase the use of continuous gum but it would be of great utility in ordinary cases of plate and vulcanite work.

2. MATERIALS.—An investigation of the formulæ of the ordinary continuous gum body and enamels shows that they consist of ingredients of very different degrees of fusibility, and such substances as cryolite, Bohemian glass, flint glass, "white glass" (whatever that may mean) are evidently added for the purpose of reducing the fusibility of, or acting as a cement to, the refractory ingredients.

A prolonged series of experiments, which it would be tedious to detail, resulted in the production of a body, and enamel which if properly manipulated is of sufficient strength and durability, at least as far as my present experience goes.

In my latter experiments I have had the great advantage of the co-operation of Mr. H. J. Powell who is one of our greatest scientific authorities on the subject.

By utilizing a formula of the mosaic work for which the well-known White Friars Glass Works, London, are celebrated, we have succeeded in producing gum enamels which are not only capable of infusing the relatively low temperature but giving what I trust you will regard as sufficiently artistic results.

I think that you will admit that, just as we match teeth it would be almost as easy to match the natural gum, which in different mouths presents an extraordinary variety of shades and appearances from the pale anæmic gum to that purplish turgidity not unfrequently found to be chronic in many mouths.

After having referred to the extreme fusibility of the new enamel you will doubtless be surprised that the specimens presented to you are mounted on a highly infusible base. The new method may be fused on copper, dental alloy, and gold, but it was early discovered that there was so far only one material, namely, platinum, which was available, and that for two reasons:

(1) During heating chemical change takes place between one or more ingredients of the enamel and metallic base, so that only recently I have been able to obtain a natural gum color on any other metallic base but platinum and pure gold.

Experiments as to the adhesion of this vitreous enamel on various metallic bases afforded a reasonable clue as to the cause of the change of color.

(a) On pure gold there was no discoloration.

(b) On silver there is a yellow discoloration.

(c) On copper there is a black or greenish discoloration.

These facts seem to indicate, first, an oxidizing of the metal under the influence of heat, and second, the metallic oxide thus formed, imparting its color to the vitreous enamel, either directly or by causing some further chemical change in the constituents of the vitreous enamel.

In my earlier experiments on 18 carat gold, we obtained so much discoloration as seemingly to preclude its use in this method. Latterly, I have been able to obtain fairly satisfactory colors on 18 carat gold, but have so far been unable to find a solder which could be used without discoloration of the enamel.

(2) The co-efficient of expansion of platinum and glass being the

same, platinum must possess obvious practical advantages, especially as to adhesion, over any other material.

If it is desired to give the denture the more acceptable appearance of gold, it is easy to do so either by electro-gilding or better by employing a plate which has been rolled out from platinum with pure gold sweated on its surfaces.

The co-efficient of expansion of gold although differing from that of glass does not seem sufficiently removed as to utterly preclude its employment. Like the older methods the new material is lacking in elasticity and, therefore, it is only of sufficient strength when there is a sufficient thickness of the material, and the plate is rigid, it is better, therefore, to form a boundary or limit for the material by turning up the edge of the plate or better by soldering the rim of triangular or square wire not only around the buccal margin but also on the palatal aspect of the plate.

In filling upper cases, it is of little practical advantage to cover the plate with either gum body or enamel as that only serves to increase the thickness of the plate and increases the prospect of future reparation.

With regard to the variety of shades of gum tints, experience has shown that a gum enamel containing exactly the same metallic oxides, as coloring materials may be made to give quite a variety of tints by the state of subdivision.

Thus, if the enamel is somewhat too bright, it may be reduced by slight mulling on a glass slab, but if it is too finely mulled the color becomes very much lighter but also more opaque, which is, of course, a decided disadvantage. From the four samples sent, representing two grades of the normal arterial and venous tints, four other distinct clear gum colors may be produced by slight mulling, and by making them in different proportions still further tints may be produced. Other grades can be added as occasion may demand.

(3) Firing.—With regard to this process I have had considerable difficulties as no existing form of furnace was found exactly applicable to the nature of the work, and the dimensions of the ordinary denture.

By increasing the aperture of Fletcher's muffle furnace No. 261, made for other purposes, I was enabled to adapt a muffle of a sufficient size. An ordinary fire-clay muffle has now replaced the platinum one which I used until recently. I have also used a similar shaped cast iron muffle with perfect success. This has the

advantage of being unbreakable, but the disadvantage of requiring frequent whitewashing, and heating several times before it can be employed with satisfaction.

I am now waiting for a new furnace which Mr. Fletcher is making for me. It will be extremely simple. There will be no muffle, but the firing will be done simply by time in an inner chamber, most probably over an ordinary bunsen burner. The bunsen used with the furnace I am at present using is an ordinary draft gas and air burner requiring no blowing, only good draft and a full gas supply. The firing may be accomplished in about twenty minutes, or at the utmost half an hour, starting all cold. It is a distinct advantage to anneal the plate by slow cooling. This is best effected by turning the gas down slightly and retaining it several hours at a temperature somewhat less than the firing heat, and then gradually allowing it to cool down in the oven during the night. On turning out the gas, closing the chimney retards the process of cooling very materially by preventing any draft of cold air through the furnace. The longer the piece is in cooling the less likely will be the appearance of cracks, for although these are frequently invisible to the naked eye, they are almost always present. I have had, however, very fair practical results without retaining it at the low temperature.

Mr. S. J. Hutchinson, the president of the Odontological Society of Great Britain, in his recent inaugural address, when enumerating the many problems in dentistry which yet remain to be solved, and thus afford ample scope for further research, concluded as follows: "In the workroom we cannot find out a substance possessing the beauty of so-called continuous gum which shall be as easily worked as vulcanite."

Far be it from me to pretend that by this process I have solved this problem, but from my own experience, as well as that of my assistants, working in a laboratory with only experimental equipment, I feel convinced that this new process is a tangible contribution toward that ideal.

My present purpose, however, is sufficiently attained if this description of the process and the specimens * illustrating it have interested you; for I have long felt that I owed the members of

* The specimens were unavoidably detained at the Custom House, New York. They will be exhibited at the meeting in Springfield, May, 1892.

the Illinois State Dental Society some practical token of my existence as a corresponding member and a substantial expression of my thanks for the honor conferred.

LIST OF SPECIMENS.

- (1) Block of 4 teeth (Ash's) ready for enamelling.
- (2) Block of 4 teeth (Ash's) soldered on platinum, 2 firings. Once for body. Once for enamel. Mounted on "Weston" metal.
- (3) Block of upper and lower front teeth (Ash's) in occlusion. Teeth soldered to platinum wire and mounted on thin platinum base. Two firings yellow tinted body. One firing gum enamel. Cooled down in oven. Two shades of gum enamel, marking the "life line."
- (4) Block of "open crown" diatoric teeth. (Ash's) bicuspid and molars—with specimen of tooth attached. Four strips of platinum soldered on the plate without making holes through it to retain the teeth held in position by investment. Two firings yellow tinted body. One firing gum enamel. The center of the teeth filled with body and finished with ground flint glass. This was an assistant's first attempt at any continuous gum process.

CONTINUOUS GUM.

HIGH FUSING.—Special teeth required. Small selection available. Tube teeth not applicable. Small variety of gum enamel shades. Large coke furnace, or gas furnace with laborious blowing, or expensive compressed oxygen. Not suitable for partial cases.

LOW FUSING.—All teeth applicable. Large selection available. Tube teeth applicable. Porcelain teeth without platinum pins or tubes applicable. Great variety of gum enamel shades. Simple gas furnace with large busen flame, no compressed oxygen necessary. Suitable for partial cases.

REPORT OF THE SUPERVISOR OF CLINICS.

Mr. President and Gentlemen:—The Supervisor of Clinics begs leave to tender the following report:

G. W. Dennis, of La Salle, introduced a large gold filling, involving the crown and anterior approximal surface of the lower right second molar (Miss Lucy Loar of Bloomington). The principal feature of this operation, consisted in the fact, that anchorage for the filling is secured by pressing into cement which is placed in the cavity, some crystal gold; after the cement has hardened the filling is proceeded with in the usual manner.

In the case before the society this precaution seemed entirely superfluous, the cavity having been so prepared that the filling was sufficiently well anchored.

W. H. Taggart, of Freeport, exhibited a case of bridge-work in the mouth of Dr. Currier of Freeport. This permanent bridge of upper jaw, extends from the third molar of the right side to the third molar of the left; the points of anchorage are two

molars, two cuspids and the right lateral incisor. All teeth are porcelain faced, except the molars. Back of the third molar on the left side one gold crown is extended beyond the point of anchorage. The work is artistic and is well adjusted.

Dr. Taggart also exhibited a case of bridge-work in the mouth of J. W. Cormany of Mt. Carroll. The piece is designated as a removable suspension bridge of the upper jaw. There are no natural teeth back of the cuspids. The cuspids and the right central incisor were cut off, banded and tubed. The bridge carries the cuspids, bicuspid, molars, and the right central incisor. Anchorage is secured on the roots of the cuspids and the central incisor only, carrying on an extension the bicuspid and molars, attached to a gold plate with English pink rubber. The plate covers the alveolar ridge—extending upon the roof of the mouth about half of an inch. This piece is well executed, it seems to be substantial and is certainly well adapted.

Edgar Palmer, of La Crosse, Wis., administered sulphuric ether to a patient, using a valved inhaler, by the use of which, it is claimed, a proper quantity of air is saturated with the vapor of the narcotic used, in such a manner that danger to life is lessened, the action of the drug is more effective, uniform, etc. In the case before the society it required about twenty-two minutes to cause insensibility. We can see no advantage in this method over the simple methods of administration recommended by the most prominent surgeons.

C. P. Dorn, of Naperville, Ill., extracted several teeth for the patient while she was under the influence of the anæsthetic.

B. S. Palmer, of Chicago, exhibited a rapid pneumatic mallet, for which it is claimed that it gives the perfect blow of the hand-mallet directly upon the condensing point, being a powerful and elastic blow. It is easy to operate and is under control of the operator.

George H. Slyfield, of Waukegan, built down about one-third of the right superior central incisor for H. J. Slyfield, his father. He made for anchorage of the cavity a general dove-tail; it was nearly square but slightly undercut. He used Williams cylinders Nos. $\frac{3}{4}$ and 1, finished with file, sandpaper and burnisher. The filling was not quite finished down, there being an overlapping of gold on the palatal surface. It will be finished properly at home.

K. B. Davis, of Springfield, made a porcelain faced crown in the usual manner. Upper left first bicuspid for a young lady.

An ingenious method of attaching crowns was presented by A. W. Harlan, simply consisting in the use of common small brass screws, screwed into the root with a screw-driver. They are inexpensive, readily applied and very firm.

W. N. Morrison and H. H. Keith, of St. Louis, took the impressions of a case of congenital cleft palate, brought before the society by Dr. Babcock, of Rock Island. A. J. Harris, of Chicago, exhibited a pneumatic mallet to be used with the dental engine.

G. V. I. Brown, of Duluth, Minn., made an inlay of gold in a tooth out of the mouth, substantially in the manner described by him at a previous session of this meeting.

W. H. Taggart demonstrated a method of facing emery paper on wheels and files. The usual emery cloth is waxed on the smooth side, with a special kind of beeswax, a piece large enough to extend over the edges of the wheel is pressed against a smooth brass wheel, revolved by the lathe, and while revolving is trimmed to the size of the wheel by holding a piece of wood on one side and a sharp knife on the other, in this way the emery cloth will be so trimmed as to exactly fit the wheel. The cloth mounted in this way answers the purposes of a wheel, is always true and will last a long time. In the same manner a piece of the paper can be caused to adhere to a flat file.

A. O. Hunt, of Iowa City, Iowa, exhibited samples of teeth as prepared for mounting on a bridge after all the necessary soldering has been done. An impression of an English pinless tooth is taken and a piece of gold plate is then struck up to fit the back of the tooth, a pin is then soldered into the inner side of this shell, so as to extend into the hollow space of the tooth. The teeth are then attached by means of cement into these shells. C. S. Case exhibited a number of models and appliances illustrating the application of the regulating system of E. H. Angle, with modifications of his own.

H. H. Silliman, of Chenoa, exhibited mounted specimens showing the calcification of teeth at birth and also at one year of age.

H. H. Keith, of St. Louis, showed a simple and inexpensive scale for the measurement of broaches during the treatment of root-canals when it is desirable to measure the length of the canal and record the same on the books for reference at subsequent treatments. Purchase a thermometer, such as are sold for 15 to 25 cents, intended for fancy work and decorations, take off the glass

holding the mercury, cut the brass back on which the degrees are marked so as to retain only the scale, nail it on the top of some convenient drawer; by holding the broach on it after removing it from the root canal and note the length of the latter. The same gentleman also exhibited an appliance for the prevention of pain or soreness during malleting. It consists of a piece of $\frac{3}{4}$ inch lead pipe about four or five inches in length, so formed that the point resembles a short foot plugger; if this is held against the opposite side of the tooth being filled it prevents pain and soreness. As it sometimes must be held when it is also desired to hold the mouth mirror, this can be readily done by cutting off the handle of the mirror and putting it into holes conveniently drilled in the lead. This is the invention of Dr. Lathrop, of Detroit. Dr. Keith also shows the following appliances for the rapid heating, soldering and cooling of small pieces for crown work, bridges, bands, backings, etc. Take a piece of Russia sheet iron, shape it into the form of a small box, and fill with common sand. Any piece laid into the sand, leaving only the part to be soldered exposed, can at once be heated and soldered, as there is no investing, drying or evaporating necessary. Also an improvement for fitting matrices to the sides of the teeth. For the matrix, No. 36 ribbon steel is used. Cut it to fit around the tooth, punch a hole in each end of the ribbon, pass through the holes a small screw square at one end, two nuts of steel are threaded, the sides of them are the length of the crown of a tooth and each of the four sides is shaped differently so as to fit different classes of teeth. The band is put around the tooth, the screws passed through the holes in it, and the ends of the steel band are drawn together by turning the screw. As the nuts fit the side of the tooth the matrix is drawn close up to the margins their entire length. The gentleman also exhibited Dr. Frank B. Darley's preventer of mouth breathing in cases of pharyngeal catarrh. With parafine and wax a sheet is moulded over the light anterior teeth above and below, also extending up and down over the gums, to this model two points are fastened corresponding with the angle of the mouth. This is then reproduced in white or pink rubber, when it is placed into the vestibule of the mouth between the lips and the teeth. It is impossible to breath through the mouth and the wearer must respire through the nostrils. W. N. Morrison, of St. Louis, showed a method of lining cavities to prevent discoloration of the dentine as follows: Take Williams' No. 4 gold and

platinum foil, line the cavity with from two to four layers, turning the gold side to the dentine and fill the cavity with amalgam, the mercury does not penetrate the platinum, leaving the gold lining pure and clean.

Many of the instruments, appliances, etc., exhibited at these clinics, cannot be commented on; the brief time during which they are exhibited does not warrant the passing of judgment on articles which only practical use can praise or condemn.

A number of other interesting cases of irregularities, etc., were also exhibited.

E. E. Hughes, who met with an accident since having promised to give a clinic, is naturally excused, with regrets on part of the society, because of his sad misfortune. S. F. Duncan who is on the programme was excused on account of the illness of his father. Dr. W. B. Ames, was prevented from demonstrating Dr. George Cunningham's Low Fusing Body for Continuous Gum, because the necessary materials were detained at the Custom House in New York. W. O. Kulp was prevented from giving his clinic on Art Technique for want of a suitable case. R. H. Mace, who agreed in writing to give a clinic on Gold Crowns, has not done so, nor has he given any reason for his absence. A. E. Matteson was prevented from performing a suitable operation for want of a good case and for lack of necessary gold, tooth, etc. The shell is completed and will be sent to a resident dentist for adjustment.

REPORT OF OPERATIONS PERFORMED AT PREVIOUS CLINICS.

1871. Peoria meeting. Operator, Geo. H. Cushing; Patient J. Frank Marriner. Gold filling in left central incisor, in good condition.

1873. Rock Island meeting. Operator, Geo. H. Cushing; Patient, C. A. Kitchen. Gold filling upper right bicuspid, crown and posterior proximal cavity, filling perfect.

1874. Jacksonville meeting. Operator, E. C. Stone; Patient, J. A. W. Davis. Gold filling, lower right first molar, crown and anterior proximal cavity, filling perfect.

1876. Galesburg meeting. Operator, J. N. Crouse; Patient, C. A. Kitchen. Gold filling lower left second molar, crown cavity; filling perfect.

1878. Rockford meeting. Operator, E. D. Swain; Patient,

J. Frank Marriner. Upper right cuspid, crown and posterior proximal cavity, gold filling, slightly imperfect at cervical border.

1883. Decatur meeting. Operator, Geo. D. Sitherwood; Patient, J. M. Blythe. Upper right first molar, abscessed, roots treated and immediately filled with oxyphosphate, crown with gold, all in good condition.

1884. Springfield meeting. Operator, J. N. Crouse; Patient, C. P. Pruyn. Left lower second molar, soft gold filling, failed.

1885. Peoria meeting. Operator, C. J. Tibbets; Patient, C. B. Sawyer. Gold filling lower left first molar, crown and anterior lingual cusp. Broken away, filling needs repair.

1887. Jacksonville meeting. Operator, Louis Ottofy; Patient, I. M. Atkinson. Implantation; tooth in good condition.

1888. Cairo meeting. Operator, D. B. Freeman; Patient, B. D. Wikoff. Gold filling, lower left first molar, posterior proximal cavity, failing at cervical border also a gold filling in the lower left second molar, anterior proximal cavity, in good condition.

1889. Quincy meeting. Operator, W. N. Morrison; Patient, E. M. Robbins. Upper left first molar. Roots were filled through an opening in the crown cavity, about such as would be made to permit accumulated gases to escape. Root filling of chlora-percha and gold wire. Last year reported to be in an abscessed and bad condition. Since then the filling and root filling has been removed, abscess treated and the roots again filled with chlora-percha and wood points. The tooth is again abscessed and in a bad condition.

1890. Springfield meeting. Operator, Edmund Noyes; Patient, B. D. Wikoff. Lower right second molar, large anterior proximal and crown cavity, gold filling, good condition.

LOUIS OTTOFY, *Supervisor of Clinics.*

GEORGE D. SITHERWOOD, }
B. D. WIKOFF, } *Assistants.*

DISCUSSION.

DR. SITHERWOOD: In regard to the lower molar tooth filled by Dr. Dennis with oxyphosphate, that case was treated and the tooth filled four years ago by myself. It was a case of exposed pulp, the dentine immediately covering the pulp was partially decomposed and irritated, producing toothache. I filled it with oxyphosphate of zinc, and it has given no trouble since, and I consider it a successful operation.

MISSISSIPPI VALLEY ASSOCIATION OF DENTAL SURGEONS.

PHONOGRAPHIC REPORT BY F. W. SAGE, D. D. S.

SCIENTIFIC INVESTIGATION OF THE CRANIUM AND JAWS.

ABSTRACT FROM PAPER READ BY DR. EUGENE S. TALBOT.

(Continued from Page 326.)

MARCH 11, 1891.

Dr. Talbot began by calling attention to a feature of the work performed by Dr. E. G. Betty, whose measurements in his work of classification of skulls, were made across the space between the wisdom teeth, while ordinarily, hitherto, the line between the first molars has been employed. Years ago Dr. John Mummery recognized the fact that the measurements should be made in this region—that is, at the anterior root of the first molar. The third molars never erupt normally, but are the creatures of circumstances. The first permanent molar erupts before the development of the alveolar process, and is carried undisturbed laterally with it.

Again: the alveolar process at the extremities, on the lower jaw, is always influenced by the divergence of the wisdom teeth—the tongue, and the cheeks—while the first permanent molars are held in position by each other. [By the occluding teeth of the opposite jaw, (?)—Rep.] Frequently one or more of the wisdom teeth are missing, which fact would render it impossible to get any measurements at all. I regard the antero-posterior diameter of as much importance as the lateral diameter under certain conditions. Prognathism of either the upper or the lower jaw, frequently results from abnormal development of the opposite jaw. Dr. Richard Owen is able to classify some of the lower animals by the antero-posterior diameter of the jaw, so it may be that we, with proper measurements, may be able to add materially to our knowledge of the race, by this means. Dr. Patrick has said with regard to measurements of human crania, that “this has puzzled the brain and the ingenuity of physiognomists and craniologists for 150 years. They have arrived at no reliable data in regard to the relative size of the cranium and face bones. Measurements of crania amount to little as designating brain capacity, or race.

But should we confine ourselves to investigations directed to the teeth alone? Why has there been no progress made in 150 years? Because the starting points for measurements have not

been accurate and infallible. Take the facial angle : no two authorities have agreed as to what should be the direction and location of the lines defining it. It seems not to have been noticed that the bones of the body never develop in strict harmony with the opposite sides, and that the bones of individuals differ in their development. I have seen persons with one ear higher than the other, or one eye. Others have jaws posterior or anterior to the normal position. The same thing is true of the nasal spine.

It is a fact that less is known of the osseous system than of any other parts of the body. I have gone over Dr. Betty's paper and have found only three cases of irregularity in the mouths of the mound-builders. * * * Dr. Patrick says there is no male or female skull. What will the work of the investigators amount to, if after it has been done they have not found themselves able to classify skulls as those of males and females? * * *

The Bertillon method of measurements for identification of criminals can be applied for scientific purposes, the only requirement being to find unfailing points upon the cranium for making measurements.

DISCUSSION.

DR. J. J. R. PATRICK, Belleville, Ill. Mr. President and gentlemen. One day Dr. Robley Dunglison, of the University of Pennsylvania, appearing before his class in the lecture room where he taught, found a slip of paper lying upon his desk, upon which was written the following question: "If it is true that birds of prey lay hard shelled eggs, how is it that the American eagle lays eggs with a soft shell?" The Professor glanced over the assembled class, wiped his glasses, adjusted his neckerchief, and finally said: "Before attempting an answer to the question it will be necessary for the gentleman who wrote it to first prove that the American eagle lays a soft-shelled egg." (Laughter.)

The paper just read is more in the nature of a criticism on the investigation that is to be made under the protection of the American Dental Asso., than a scientific treatise. I, therefore, feel compelled, as curator of the investigation, to ask the author of the paper to explain a few paragraphs that appear to me ambiguous, while others require a further elucidation, before I can open the discussion.

The paper is entitled, "Scientific Investigation of the Cranium

and Jaws." (Presumably human.) The title of the paper requires that nothing but a careful classification of existing facts and their relations to each other should appear, for the questioning spirit of science demands facts; numerous and plain, and the conclusions from them inevitable. Facts must precede all theories, all attempts at exposition; the verdict must come after the evidence, not before it.

Now, therefore, in the interest of science, it seems to me proper that the essayist answer the following questions:—1st. Have the advocates of the measurements of the jaws discovered in such measurements anything that will be of service to the profession, or a promise of service?—anything that will prove or disprove theories regarding the development and diseases of the jaws and teeth of the human subject? Have they discovered a cipher by which they can decipher the laws governing variation in animal forms? If they have, it is their first duty to establish the truth of their cipher, and not precipitate a debate on it. I am in search of facts, not theories!

2d. That the anterior roots of the first molars should be the only parts giving a true and accurate (measurement) development of the jaws, and be recognized as a fact by the late Dr. Mummery, requires further elucidation, and cannot be dismissed by the essayist's saying that "it is very natural," for it is just as natural that it should not, as that it should be recognized as a fact.

Again: the essayist says: "The first permanent molars are the only teeth that erupt normally." Am I to understand that all the rest of the permanent teeth are erupted contrary to system or law (*i. e.*) abnormally? Does the essayist mean what he says, when he asserts that the third molar erupts after the alveolar process has developed, while the first permanent molar erupts before the development of the alveolar process? "And the sixth year molars being teeth by which most of the work of mastication is accomplished, the jaw is, on that account, better developed in the region of these teeth?" These statements require verification. If the essayist means that the sixth year molar, when retained, is longer in use than any other tooth of the permanent series—in the human subject—the statement would be correct, but that it is more useful in mastication, than any other tooth of the same series, would be equivalent to saying that the legs are more

useful than the arms, seeing that each tooth has its special use and office.

3d. I desire to know who that Dr. Richard Owen is, who was "able to classify some of the lower animals by the antero-posterior diameter of the jaw." A reference to his work or paper on the subject is desirable.

4th. The essayist says: "It is a singular fact that less is known of the osseous system than of any other part of the body." Is it possible that anatomists and physiologists have neglected the substructure upon which the superstructure depends? Have the following authors and original investigators lived and toiled in vain? [Here Dr. Patrick quoted a list of a dozen or more authors and the titles of their works on the bones, etc., from the sixteenth century to the present time. He then resumed as follows]: Now, in the name of these immortals, these workers in the field of original research, I protest against such statements being made, unsupported by the slightest evidence.

Now again, the essayist proposes to adopt for the purposes of his method, a system of measurements invented and in use in France; the Bertillon method for measuring certain portions of the body of an adult known to be criminal, in order to assist in *reidentifying* the individual in case of need. Not that the methods of measurement first used and introduced by Bertillon are methods by which, through measurement, the *tendencies* to criminality may be arrived at. Were mankind organized beings exactly alike, these measurements would be useless. For every germ, in its development, meets with obstacles—contending forces—so that countless millions of germs or seeds that are produced, never come to maturity, but rot before ripening. And by far the larger number that *do* mature, are warped, gnarled, and twisted to such an extent that few can be said to be in that condition that physiologists call normal. Constant, unrelenting and persistent are the forces that govern life. An excess of either one or another must change and modify the character of the organism upon which they act, and the wonder is, to the observing mind, not ~~that~~ ^{that} nature does her work so poorly, but that she does it so well. If we were to compare millions of faces, we should find none of them exactly alike. I see before me quite a number of intelligent faces, all of which look like human faces, and yet no two of them are alike.

This, then, is the Bertillon method by which criminals may be

re-identified. I ask, what does Dr. Talbot find in the principles of this method which commend it for the purpose for which he proposes to use it? Applied in that way, it can have no scientific value whatever.

DR. TALBOT: This is the kind of a discussion that I like. I have been fifteen years at this work, and this is the first time I have been favored with a thoroughly earnest discussion. (Laughter.)

I have not come before this society unprepared to back up my assertions—to my own satisfaction at least, if not to that of others. Now Dr. Patrick's explanation of the Bertillon method of examining the criminal, has brought that feature of the system I suggest for adoption for the purpose of special scientific research in this field in which we as dentists are interested, clearly before us. He has afforded me the very opportunity I want for proving the efficiency of the system as applied to the uses for which it was devised. It makes no difference where the criminal goes; they can identify him as a criminal wherever he is found; they can tell how long he has been in prison.

DR. PATRICK: Do you mean to say that a criminal who has been subjected to an examination of this sort in France, can be identified in Australia, if he be detected in a crime? Do you mean to have us understand that the police of Australia would be able to know that this man had served a term in Joliet, and how long he had remained there?

DR. TALBOT: Nonsense! I mean of course, that measurements having been taken of an individual—the *place* has nothing to do with it—would serve to identify him upon being applied to him a second time. If the man is taken in a crime in Australia and the measurements were made in France, we might send the man to France, or we might send the measurements to Australia, as Dr. Patrick might dictate. (Laughter.)

DR. PATRICK: I do not want to have any misunderstanding about this. I think now we understand each other. (Laughter.)

DR. TALBOT: What was the next to the last point of objection you raised?

DR. PATRICK: With emphasis—Who is Dr. Richard Owen? [Applause and laughter.]

DR. TALBOT: Dr. Richard Owen, who received a pension from Queen Victoria, resides in the queen's garden in London. I can-

not now recall the book or the page on which you will find what I said he stated; you have the advantage of me there. Now in regard to the roots of the superior and the inferior molars—you all know that the first permanent molars come first. The jaw is small when they come. The temporary teeth are still in place. They articulate; they cannot deviate in one direction or the other without moving together, so the process develops regularly also. When the jaws are fully grown you have a full development of the jaw-bones, and the roots of the teeth are near the outer plate of the process.

The outer surfaces of these buccal roots furnish the exact lateral diameter of the jaw. The other teeth are influenced more or less by local causes. This conclusion was arrived at years ago, by the late Dr. John Mummery, of London. I have arrived at the same conclusion (after years of study of irregularities of the teeth,) from the fact that these teeth are always in a normal position laterally, in their relations to the jaw; no matter what the irregularity may be.

The second molars deviate to the right or left according to the locality of other teeth. That, however, is perhaps unimportant as regards our present purpose; I would just as soon take the measurements from the second molar as the first. But the third molar—I think Dr. Patrick was jesting when he made the criticism—I think he knows the wisdom teeth never develop normally. They come sometimes outside, sometimes inside the normal line.

DR. PATRICK.—You cannot dodge me in that way! (Great laughter.) That is not the question at all. Now, the question I wish you to answer is this, you said that the first permanent molars are the only teeth that erupt normally. Are all the rest erupted abnormally?

DR. TALBOT.—Yes sir.

DR. PATRICK.—You differ with Owen. You say the first permanent molar erupts before its alveolar process is developed. What sustains it?

DR. TALBOT.—The first permanent molar comes on the circle of the last temporary tooth.

DR. PATRICK.—Well! Well! Well! Everybody knows that. I want to pin you down to your statement. Say yes or no, does the tooth develop independently of the process?

DR. TALBOT.—Most certainly it does!

DR. PATRICK.—You take back then, what you said about the other molars erupting ab-normally, do you?

DR. TALBOT.—[ignoring the last question.] Dr. Patrick wants to know what object there can be in taking these measurements. Why, we need to know whether the people or race of the present day have jaws larger or smaller than the earlier races of men. It is very important. I have been for seven or eight years collecting material; I have six hundred dentists in the United States and Europe making measurements for me, and I can show conclusively that the human jaw is growing smaller and smaller from first to last permanent molar. Now, shall we rest content with making examinations of teeth merely just for our own present knowledge, or shall we make such examinations as will be of benefit to future generations.

DR. PATRICK. I want to know if this Dr. Richard Owen is the anatomist and reconstructionist:

DR. TALBOT. Yes, sir.

DR. PATRICK. Then *the* Dr. Richard Owen is not a doctor; he is simply Mr. Richard Owen. He is an anatomist, a physiologist, a reconstructionist. I defy any one to show in a work of his, an instance in which he has classified animals, lower or higher, by or through the medium of measurements. Classifications are not made in that way; they are made by means of a previous intimate knowledge of every part.

But—one of the most important points in classification is the teeth, because even one tooth will show the character of the animal—whether it was herbivorous, carnivorous, insectivorous etc. That is, when the man who examines such teeth has the knowledge to discern these things.

But to return to—Owen (Great applause and laughter). I am informed by a gentleman present, that the Richard Owen quoted by Dr. Talbot, is not *Richard* Owen at all; he is *David Dale* Owen, a geologist of Indiana, a gentleman who made geological surveys for the U. S. Government in the Northwest. *Richard* Owen, an English anatomist and physiologist, author of the *Anatomy and Physiology of Vertebrates* (3 vols.), also author of a work on odontography, and of many other works of like character, has been dead, I think, two years. The Dr. Owen whom Dr. Talbot has quoted, is a man of learning, but he is not the man he was after (laughter.) And he never determined the character, or classified any animal forms by

measurement of the jaws. When a man reads an essay for me to discuss, he must not set up men of straw for me to fight. Dr. Betty has done excellent work—the best up to the present day (applause). The only thing I object to, is that he went alone. He needed assistance. It would take twenty years for one person to do it all. Co-operation is what is needed in this matter. Now the measurements taken by Dr. Betty were from third to third molar, right and left. The author has failed to say where they are essential. Every anatomist must certainly know, as we descend in the scale of humanity, the superior arch at the tuberosity diverges, so that we find the lowest form of the human skull in the Australian; and the third molars in the Australian diverge right and left, whereas in the European and all other races, there is from that point a constant *convergence*. In other words, the Australian's jaw is not a parabolic curve.

Now I tell you again—and it is the duty of every one to inquire and see whether I am right—wherever you find a tooth in the jaw, whether it is a supplemental tooth or one properly belonging to the series, you may be assured that that tooth has been developed with a process. The edentulous mouth has *no* process, so that it is wrong to say that the sixth year molar comes up with a process and the twelfth year molar *without* a process.

Probably the reason why Dr. Betty adopted his mode of measurement was that he knew that in the chimpanzee and in the monkey and in the ourang-outang the superior maxillary diverges. In the lower forms of negroes there is no curve, but in the Caucasian there is a parabolic curve. And Dr. Betty should know that these tendencies to divergence or convergence are manifested only in the point of location of the third molar tooth.

There is no such thing as ever attaining to a general average of measurements. I feel impelled to make a few remarks on the male and the female skull. There are no differences in the sutures, positively *no* differences, by which they may be classified as male and female skulls. You may gather some ideas of the constant variability of the process by which the human frame attains its growth, when I tell you that 12,000 cadavers carefully dissected by Quain to establish a rule for the guidance of the surgeon, and yet no two were found exactly alike. You cannot duplicate any one arrangement in any cadaver. There is no such thing as perfection in

any one frame. Nature never makes anything perfect. Why, if we were all perfect we could make no progress.

I should hate to be perfect. [Laughter.] I should hate a man or a woman in whom I could not find something to forgive. [Laughter.] A gentleman used to visit me—an accomplished Greek and Latin scholar—whose conversation was a delight when he talked upon subjects he understood. But I found out after awhile that he agreed too readily with any and all opinions I had to advance, and so I got finally to hate him. [Great applause and laughter.]

He was so amiable and so good that I couldn't find anything about him to forgive.

As regards the impression which prevails, that the teeth of the race are deteriorating, I can do no better, in concluding my remarks, than to quote briefly from an essay I read in 1879, at the meeting of the Missouri State Dental Association. "We can trace the spirit of this doctrine of degeneracy through successive ages, down to our own time. It has been maintained and defended from every pulpit and rostrum in Christendom, and forms the basis of all opposition to every advance in every department of natural science, especially those branches which relate to Anthropology, or the science of man. Like predestination in ethics, it has a constant tendency to paralyze every intellectual effort. These opinions are simply dogmatic and traditional, held by this man because they have been held by that man, a generality of assent, which means but little more than a multiplicity of credulities. There is nothing so servile as the human mind in the presence of established or received opinions, and this opinion is not confined to those uneducated in the delicate art of observation, for men of great culture find great difficulty sometimes, in seeing plain facts when they come in conflict with their preconceived notions."

WEDNESDAY EVENING.

DR. H. A. SMITH: As chairman of the section appointed to make this investigation, I have some knowledge of what has been done. I agree with Dr. Talbot that these investigations should cover every point that may be of future interest. I was struck with the work done in Philadelphia, in the Morton collection. The tabulation was admirable. But in all that investigation, that which to us as dentists would be of interest, has been omitted. It must

all be gone over again. I am delighted to have witnessed such a gladiatorial combat as we have just had. While Dr. Patrick is very positive that these measurements are superfluous, I cannot say that I agree with him. This is a very important work, one in prosecuting which it has been difficult to find competent assistance. Dr. Patrick has invited co-operation, and is willing to receive suggestions. I am afraid that the work proposed is not appreciated by the profession at large, however. Let us all say amen to it, and render what assistance is in our power.

DR. E. G. BETTY: Mr. Chairman. I have listened with much interest to Drs. Talbot and Patrick. From the general tenor of Dr. Patrick's remarks, we have been led to think that there is no value or advantage in taking measurements. Dr. Patrick is in search of facts not theories. But as a disciple of the Scotch school, he deduces a theory before he has a fact by which to substantiate it. (Laughter.)

The work which I undertook several years ago, I undertook alone, and without any previous instruction. I was instructed as I went along. There is in everything we undertake, an advantage in being able finally to adduce figures. Figures never lie.

DR. PATRICK: Sometimes they do.

DR. BETTY: Well, that is according to the caliber of the mathematician. (Laughter.) I was indebted for my inspiration, not to what I had read from Cuvier or others of his school—(a voice "Time!" Laughter.) It is useless and futile to make any statements upon any subject, unless you have some definite basis for your statements. My idea in making those investigations was not to settle or determine any proposition or theory, but merely to supply *facts*. Those measurements may or may not be, of value. I thought while I was making the investigations, such as they were, that it was best to include all I possibly could do. If, according to Dr. Talbot, the measurement across the space between the third molars is useless, then my work may have been in vain. So far as figures or measurements are concerned—as regards the antero-posterior measurements of the jaw—these might have been taken from the occiput to the genal tubercles or the nasal spine, thus giving the extreme antero-posterior diameter. I did not expect in that investigation to determine anything. I had gathered from what little I had read on the subject, that something of the sort was required, and I felt it incumbent upon myself to do

it. I have since learned of important considerations bearing upon the subject, of which I was then ignorant.

Dr. Talbot's theory of the development of the maxillæ and of the eruption of the third molar tooth, is new to me.

If I understand Dr. Patrick aright, there being no two human frames alike, it is probably impossible to establish an ideal dental arch. But admitting that, time alone will determine whether it is of advantage to take measurements not only of the jaws but of the skull, which includes all the bones of the head and the face. Cranio-logists include 125 measurements of the skull. That work is now being done under the supervision of Prof. Matthews, in the Army Medical Museum at Washington. This work includes some measurements that I suppose I could supply, but since I have heard these two gentlemen on the subject, I begin to suspect that I have been chasing a Will-o-the-wisp. Dr. Patrick's statement that my work has been superfluous, has not been proved.

When I began the measurements, I had a consultation with surgeon Billings (in charge of the museum), who had nothing to offer me, until I explained my mission, when he placed the collection at my service. Dr. Wortman called my attention to the "heel" of the arch, its size, form, multi-cuspal condition of the third molar, etc. I did not read Barrett's, Dr. Mummery's, Patrick's or any body else's paper. I had nothing upon which to predicate hypothesis or theory. I was handicapped by the fact that I was not allowed to make any measurements, or do anything to conflict with or forestall the work being done by the museum scientists. I do not think that Dr. Patrick would have termed measurements useless, if he had stopped to consider. He may change his opinion yet.

Dr. Talbot has shown us an instrument of his own devising, for measuring the depth of the palate. That measure it is impossible to reduce to reliable figures, for the reason that we cannot get a standard of measurement on account of the abrasion on the cutting edges and grinding surfaces of teeth; while senile jaws having no teeth and exhibiting great absorption, are also to be considered.

These two factors give the extremes of depth or shallowness, as the case may be. It is fair to presume then, that this can be no index as to the length of the skull, measurement from the parietal eminence to the point opposite the genæal tubercle.

I have said that Dr. Wortman called my attention particularly

to the third molar. He said that it was necessary to show the convergence or the divergence of the jaw, at the heel of the arch, &c. [See *supra*.] * * * or of supplemental teeth opposite the third molar; the point being that to which Darwin has called attention; touching the question, whether that tooth is going out of existence. In view of that point, Dr. Patrick says I have given a valid reason for making measurements at that place, whereas Dr. Talbot can show none for making measurements opposite the anterior root of the first molar. Dr. Wortman has called attention to the fact that in the lower orders of animals, the action of the jaws may produce pressure at certain points, which in course of time become callous, and in the course of ages a tooth, or something resembling a tooth, will appear. Two of these impinging upon each other will develop a tubercle at the point of contact; or root also follows, in order to give a basis to resist the force being exerted.

In conclusion, I consider it very important to make measurements, whether they be opposite the first, second or third molars. The antero-posterior measurements we already have a reason for making.

DR. SMITH: Dr. Betty, do you consider it possible to recognize a female skull?

DR. BETTY: I am no craniologist. I have stated reasons elsewhere for my not being able to determine age, sex, or facial angle; this angle, as has been explained, and as is well known to craniologists, is of no value whatever in indicating the intellectual capacity of a race. Even the weight of the brain, as we know, is of no invariable significance. Flint's Physiology speaks of a brain of a great mathematician, which weighed only 45 ounces.

DR. PATRICK.—I have no objections to measurements at all—none in the least. With me it is only a question of economy of time. There is an immense amount concerning the teeth alone, to be observed. The government is employing men paid by the year, to attend to measurements. It is no sinecure, you may believe me. These men are verifying work that others do.

Now, the reason I hold Dr. Talbot strictly to account for what I regard as a deviation from sound principles, is this: Dr. Talbot is an M. D., a D. D. S., a Professor, also an author, and for all these reasons I think he had no business to come before this, the oldest society in the United States, with a paper entitled "Scientific

investigation of the Cranium and Jaws," without first informing himself of the extent of the investigation undertaken. Especially so, when it is a criticism on what is to be done by the American Dental Association. I have every respect for a man who branches out into a line of original investigation, especially when he goes into it unaided. But I knew this was not a work for one man to do; it was a work for the many. We must have co-operation, to carry on this work of investigation. For years I have asked for co-operation in this matter—in the Missouri State Society,—in the Southern Society—in the Illinois Association, in a dozen societies I have asked it—time and again. Twelve years have passed, and nothing has been done in compliance with my oft-repeated requests. Why? Because, so many looked upon it as something unattainable, or nonessential, or — I use the language of the chairman of one committee; he said, "somebody might get ahead of some one else!" I have published four papers within five years, hoping to awaken an interest in this really stupendous undertaking. Did I go singly and alone, to crown myself with laurels? Listen. Four times have I had men approach me with their dental registers asking me to admit their registers and they would go with me! Merchandizing in questions of this character! If I would only just bow down to Mammon! only consent to support them in a scheme to force upon the American Dental Association a dental ledger. And when I make my report, finally, I intend that it shall bring the blush to the cheek of those men who know that they now stand upon a pedestal upon which they have no business to pose! (Great applause).

Measurements are for those who have the time to make them. I do not want to prejudge the case, but I give you my word as a gentleman, there is nothing to be derived from them after you get them.

DR. TALBOT: Dr. Patrick has made intimations that require me, as a duty I owe to my own self-respect, to ask him now and here, if he means that I have ever written to him or intimated to him in any way, that I would join him in this work, on any such disgraceful terms?

DR. PATRICK: No sir.

DR. TALBOT: I thank you. I wish to state now, that Dr. Owen received a degree, that of L. L. D., in 1882, from the Union State University, of Indiana. Dr. Patrick depends for his authority

as to the knowledge we have of the osseous system, upon the physiologists and anatomists of three hundred years ago. Now what I meant to say about our knowledge of the osseous system was this: We are all familiar with the authors quoted by Dr. Patrick, upon the subject of the normal development of the osseous system; but that is not the point. I claim that little or nothing has been written upon the abnormal development of the osseous system as shown in my paper.

DR. H. A. SMITH: It does not seem to me to have been shown that it is entirely a waste of effort to investigate with a view to determining the sex by the skull. * * * I do not think Dr. Betty's work of taking measurements and making his classifications has been quite appreciated.

DR. TALBOT: This should be, in my estimation, one of the main objects of this investigation, because, as the curator does not intend to make measurements, and as irregularities of the teeth amount to nothing, as regards prehistoric skulls, caries of the teeth will be the chief matter for consideration. If the committee are unable to classify male and female skulls, I can see no object in making this examination, since there are conditions frequently existing in the female which makes decay of the teeth more liable to occur than in the male.

Adjourned.

THURSDAY MORNING, MARCH 12TH.

DR. PATRICK: It is generally accepted as a fact, in the medical and dental professions, that man deteriorates physically as he advances in civilization.

Some years ago, you may recollect that in the dental journals, and in the debates in dental societies, the idea was advanced that it was our mode of living—the introduction of superfine flour, fine foods, etc., that caused decay of teeth. The grain from which our flour was prepared was robbed of its lime-salts in the course of preparation. You have heard that question discussed by the hour, much valuable time being consumed; and all the time there was no basis whatever for the assumption. I never knew any gentleman to touch upon the subject of digestion or assimilation in all the discussions. Different gentlemen went to work, especially those who were M. D's, to tell how they advised mothers to take care of their children's supplies of lime-salts (laughter), and

some advised—their female patients—before they were yet married, instructing them, forsooth, as to what they should eat, wherewithal they should be clothed, *et cetera*. It struck me as absurd. The dentist is out of his sphere when he presumes to place himself in the attitude of medical adviser to a family. He at best occupies the position of a surgeon. I heard one of these gentlemen say, after he had been prescribing a course of lime-salts for several members of a family, “it is remarkable what a change for the better has taken place in the condition of the teeth of that family!” That man was ignorant of the formative process of the teeth and bones. The idea that he could take so much of his lime-salts and place the dose on his patient’s tongue and say: Presto, change! and lo, a miracle was wrought! And that these phosphates of lime and magnesia should go on their mission of reparation to the teeth, disregarding all the other hard tissues of the body. (Laughter.)

“There is many a slip between the cup and the lip,” but there are more slips between mastication, digestion and assimilation. No one can say how the elements contained in food will be distributed after they leave the stomach. Physiological chemistry has not advanced far enough to explain the alchemy of assimilation. A few years ago I read an article in one of our dental journals (one of the journals belonging to the trade) in which the author informs his readers that he saved all the teeth he extracted from day to day and worked them over for future use, for the benefit of other individuals; robbing Peter to pay Paul. He dissolved the extracted teeth in a proper menstrum, then precipitated the lime-salts from the liquid, decanted the liquid and dried the precipitate. The lime-salts thus prepared, with the addition of syrup to make it palatable, he administered to his patients in proper doses. He further informed his readers that he felt satisfied from results plainly observable, that his patients received invaluable benefit from such treatment. (Laughter.) I have listened by the hour to similiar statements made in dental and medical societies by men who honestly believed they were telling the truth, when they in reality were drawing upon their imaginations for their facts. I felt it to be my duty to disabuse some of them of these ideas, and the result was I made a new crop of enemies. (Laughter.) I did not care for that for I love my enemies, and it is their very errors that make me love them, I could not very well live without them. The treatment of

diseases of the teeth and of the body have been unduly influenced by the doctrine of the degeneracy of man correlated to high civilization.

“Man has fallen from his first estate.”

“Man has become weaker and wiser.”

“As the increase of knowledge and art come more and more into use, so do diseases become more apparent and increase in frequency.”

“In the march of civilization man’s methods of living become more and more artificial; hence the necessity of corrective remedies.”

It is upon these and like assumptions that men have founded their ideas of the origin and treatment of disease and irregularities in the human organism. Now if it should be found by this investigation of human crania that the prehistoric man carried with him to the grave the marks of disease; and that he was subject to irregularities in development as well as the “man who has fallen from his first estate” by becoming civilized, then our knowledge of disease and irregularities will be advanced and as a consequence of this advancement more rational methods of treatment will be adopted.

ORIGINAL COMMUNICATIONS.

BABBITT METAL VS. COMMON SENSE.

BY CALVIN S. CASE, JACKSON, MICH.

In regard to Dr. Haskell’s reply in the March REVIEW to my article under the above caption, I feel that it is hardly worth the time of a man who has work to do in the world to continue a controversy with one who not only willfully misinterprets the text, but meets arguments of a scientific nature—which if uncontroverted must stand as *prima facie* evidence against his method—with words which leave a doubt as to their being even comprehended.

What can be said to a man who replies to a statement of fact relative to the laws of expansion and contraction, and the probable influence of these forces in producing a disproportionate surface change when the material is unevenly deposited in irregular masses—as in impression, model and die of different shaped mouths—with the following nonsensical argument: “Did it ever occur to these theorists that the expansion of the sides of a cavity contracts

the space, and this when filled the expansion of the model offsets the expansion of the impression."

In other words, the expansion of the $\frac{1}{16}$ to $\frac{1}{8}$ of an inch thickness of material which forms "the sides of a cavity," or impression, is sufficient to counterbalance the expansion of the large mass of the same kind of material which forms the model. Nor does this feeble effort attempt to account for more than a lateral change, where as "the material forming a model of an upper—especially if the arch is high, the posterior alveoli broad and the base shallow—will be deposited in irregular and somewhat isolated masses, which, in the process of expanding or contracting, will act with partial independence, yet locally bound and influenced in movement by their attachment. The surface particles also being unequally distant from their several foci, nothing like proportionate change can possibly result."

A model of this kind could not possibly produce so perfect a fitting plate, swaged with a Babbitt metal die which exactly duplicated the model, as if swaged with a zinc die, which by its reciprocal contraction would more perfectly conform to the shape of the natural jaw.

However theoretical this may appear to our learned friend, it nevertheless is in accord with the experience of the majority of metal plate workers, and is one of the reasons why they prefer zinc, in these instances, to Babbitt metal.

The Doctor should remember that nearly all scientific knowledge has first come to us in the form of a theory, and that a large portion of it is true, only because of its irrefragability.

People who attempt to brush aside a proposition which they are incapable of meeting and combating on fair ground by styling the maker of it "a theorist," are often unmindful of the force of the acknowledgment, and certainly excusable in strengthening their position by a recitation of their personal attainments.

Not many years ago the earth was round only in theory, and many old and very wise men who occupied high places in learned institutions argued that it could not be true because the people who were supposed theoretically to inhabit the other side of the world would fall off.

The principal object of my article was to show the impropriety of blocking the wheels of progress by ridiculing things for no other reason than that they are not in accord with fossiliferous usages.

It was the common custom a hundred years ago, when going to mill, to tie a stone in one end of the bag to balance the grist upon the horse's back. If men will persist in carrying an unnecessary incubus from habit, or because their fathers did, then let them not ridicule others who have learned to part their grist in the middle, and so remove one-half the load.

In this instance we were told by a gentleman from Texas how we may avoid the necessity of making a plaster model, and the difficulties of sand moulding, by pouring the die directly into an impression composed of a certain compound.

Who can truthfully say this would not be an undoubted advantage? Yet our learned friend—without giving any good reason or even trying the method—condemns it in no uncertain language, and resorts to the following discourtesy: "I wish I could have this writer in my laboratory for ten minutes only, and show him how the difficulties of sand moulding would vanish." A remarkable assumption that "this writer" should know nothing about so common a thing as sand moulding—even with the use of oil!

In his answer he essays the following argument: "I want a plaster cast to work to, and if I get that I cannot cast the die in the impression. If I take two impressions there will always be some movement of the membrane at some point so as to make them differ just enough to prevent the plate from fitting both, and as the use of Babbitt and oiled sand simplify the making of dies I can do it quicker than wait for the impression to dry sufficiently to cast into, and with as good results."

This argument, as it reads, is so faulty and weak from beginning to end it sufficiently condemns itself without any words from me unless the writer should wish it. I am surprised that a man of so much good sense—in most things—could bring himself to write it.

DENTAL JOURNALISM EXTRAORDINARY.

The management of the DENTAL REVIEW take pleasure in issuing to the profession this number of the REVIEW, which they believe to be the largest single issue of any dental journal in the world.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITORS:

LOUIS OTTOFY, D. D. S.

L. L. DAVIS, D. D. S.

C. N. JOHNSON, L. D. S., D. D. S.

THE MCKINLEY BILL DID IT.

When ye editor was in Cambridge, England, last winter, Dr. Geo. Cunningham was persuaded to promise a paper for the Illinois State Dental Society, and he promised to send some specimens and materials for illustrating the same. The paper came duly to hand but the specimens got blocked in the New York Custom-house, and after much telegraphing, more writing, etc., we were informed that *thirty dollars* must be sent to release the same. Of course, we did not find this out until it was too late to get the specimens for exhibition before the Society. We will soon get them now, as we have been sworn, etc., that they are not for sale (to patients or dealers), and they are for the sole and exclusive use of the State Society, and a lot more of fol-lol about a little gum body, et cetera, and a few blocks of baked low fusing gum, etc. What we now know convinces us that for real obstruction to education and advancement the McKinley (bill) is in the front rank. Our readers will find his paper and we may find the specimens by our next issue.

To come to the gist of this whole matter, why could not the packages have come to the Chicago Custom-house (Chicago is a port of entry) and when they were examined we could, without so much transpiration and other ills, have secured the materials for exhibition to the enlightenment of the dental profession of the great State of Illinois. 1892 will come around some day and maybe we will not be shouting McKinley as much as of yore.

DR. JAMES W. WHITE.

The dental world of the whole country was shocked at the sudden demise of the editor of the *Dental Cosmos* on May 27 at his

home in Philadelphia. Dr. White was so prominently connected with the great house of which he was the president since the death of the founder, Dr. Samuel S. White, that his sudden removal from our midst seems a calamity too great to be realized at once. For more than forty years he gave his personal attention to many of the details of the vast establishment over which he presided. As editor of the *Dental Cosmos* for nearly twenty years the profession best knew him, and in the conduct of that journal he took special pride and spent much time in the endeavor to make it the foremost journal of its kind in the world. From the first issue he was sub-editor, and finally when Dr. J. H. McQuillen retired he assumed sole control of its pages up to the last issue which had just been printed before his sudden death. Dr. White was not only a good man of business, a capable and conscientious editor, but he was a pure man and an upright citizen and philanthropist. He filled a large place in the community where he resided and his place will be not easily filled in the various walks of life where he was wont to be seen. We speak the sentiments of the best elements of the whole dental profession when we say that there were few men in our ranks who will be more truly mourned on learning of his death. We feel as though we had truly to mourn for one who was a true friend and brother and our grief can only be assuaged at the thought that all must sooner or later depart to the unknown hereafter in time. *Requiescat in Pace.*

THE ILLINOIS STATE DENTAL SOCIETY.

In this issue of the DENTAL REVIEW we present to our readers all that was noteworthy occurring at the meeting held in Bloomington last month. It is a rare occurrence when a publisher can be found willing to incur the expense of publication of so much valuable material in a single number of a dental periodical, and on this account alone we venture to say that such liberality ought to be publicly expressed. The society is now working under the new constitution, which delegates all business to a council composed of twelve members. That they did their work well, the scientific results of the meeting will attest. The president, Dr. Truman W. Brophy, was unable to be present and deliver his annual address on account of the illness of his wife, which was a source of regret to the society; but happily she is nearly recovered at present writing.

If there were no recollection of any one thing that occurred at the meeting, remaining in the mind's eye, the lantern exhibits of Dr. D. M. Cattell on pulp chambers and canals and the superb exhibition of Dr. E. H. Angle, of his regulating apparatus would stand out as the two most valuable object lessons ever placed before a dental society. These exhibitions were so practical that even the dullest could not fail to be recompensed for the trouble and expense of attending the meeting. Dr. Cattell had some new slides showing three cuttings of a typical tooth's root and the variations from the normal root to emphasize the irregularity in form of pulp chambers and canals.

Dr. Angle first showed the various parts of his system and every conceivable variety of irregularity with the apparatus in place on a plaster model, all from actual practice. This exhibition cannot fail to be productive of better general work by dentists who saw it.

Ordinarily irregular teeth will cause a dentist to quail in undertaking a case, but now there is no excuse, save lack of ingenuity, to construct the necessary apparatus, for his system is simplicity itself. The reader may study at leisure the other work done by the society much of which will well repay careful perusal.

OFFICERS FOR 1892.

President, W. H. Taggart, Freeport ; Vice President, Garrett Newkirk, Chicago ; Secretary, Louis Ottoby, Chicago ; Treasurer, W. A. Stevens, Chicago ; Librarian, F. H. McIntosh, Bloomington.

Next place of meeting Springfield the second Tuesday in May, 1892.

THE IOWA STATE DENTAL SOCIETY.

It was our pleasure to attend the twenty-ninth annual meeting of the above society at Sioux City, May 5th to 8th. To those who know Sioux City's characteristics as a place of entertainment it is unnecessary to state that the meeting was a success in at least one particular. In fact, from the moment the Association convened, it was like the proverbial politician "in the hands of its friends." Sioux City did itself proud in its welcome to the dentists of Iowa and neighboring States, and we have never seen a society so royally entertained. A badge was presented each dentist on his arrival

and this badge represented a free pass on all the car lines in the city, on the elevated road, and free carriages for driving.

The Society was captured the first afternoon of the meeting and taken in a body to the ball game, and on Thursday afternoon an excursion was given to Riverside Park, about four miles from the city. In short, the social features of the meeting almost entirely overshadowed the scientific and reduced the actual work of the Society to the minimum; but as President Peterson remarked, "we cannot well complain."

Dr. S. C. Hatch, the resident dentist, was more instrumental perhaps than any one else in the entertainment of the visitors, and the society paid him the just compliment of electing him President.

Papers were read by Drs. W. H. DeFord, L. C. Ingersoll, Carl T. Gramm, P. H. Berry, T. L. James, J. J. Grout and H. S. West, while Dr. M. G. Jenison, of Minneapolis, gave an interesting lecture on "Some Uses of Electricity in Dentistry." One evening was devoted to a lantern exhibit by Dr. T. E. Weeks, showing silhouette prints of the natural teeth, demonstrating perfectly the relative size and form of the dentine and enamel.

We confess our inability to properly report the clinics, owing to a temporary aberration of the mind at the time from having our clinic put down in the daily paper as being done with the aid of a "motrix." The dailies of Sioux City are enterprising, ambitious, and in keeping with the city's progress, but they make the same hop, skip and jump at technical terms that dailies do the world over when they attempt to report a dental meeting. But we are not complaining—we are only smiling.

The chairman of the Committee on Dental Art and Mechanism, Dr. A. W. McCandless, had a large exhibit and showed many new things which will likely be published with the proceedings. This reminds us that the society voted to publish its own proceedings in the future and we congratulate them on this decision. A State society can establish its standing among dentists much better by the publication of its proceedings in a single volume than by depending altogether on the journals to place their matter before the profession.

One of the most impressive features of the meeting was a memorial hour set aside for the consideration of resolutions in memory of the late Dr. Wm. H. Atkinson. The society was addressed by

Drs. W. O. Kulp, A. O. Hunt, J. T. Abbott, J. F. Sanborn, L. C. Ingersoll and C. J. Peterson, all of whom related personal reminiscences illustrative of the beauty of character, simplicity of nature, strength of conviction and undying devotion to dentistry of the venerable patriarch whose death has made a profound impression on the profession everywhere.

C. N. J.

MICROBES ONCE MORE.

While we were at the meeting of the Illinois State Dental Society, Dr. W. N. Morrison, of St. Louis, took the floor and discussed the question of disinfection and the filling of roots. After the session had concluded several of our astute dentists, not residents of Chicago, remarked that if "they had advocated the driving of gold wire into a root canal where blood was welling up through the foramen they would have received such a dressing down (in words) as would have silenced them for a month or two; and they wondered why it was not done anyway, etc., etc."

The new generation and the new facts in bacteriology are growing side by side and the time will soon be here when the necessity for the utmost care in handling pulpless teeth will force itself upon every progressive dental surgeon, no matter what his previous teachings or practice has been. It will not do to stand before a dental society and sweep away with one motion of the hand all of the patient work of the hundreds of practical workers in bacteriology, unless something is offered that will prove the untenableness of the positions taken by such experimenters. Clinical history is good in some instances but it will not convince any one when it is unsupported by a single experiment. Animalculæ are not found in the roots of teeth, nor can they be seen in a dental pulp, but bacteria and their spores are always present (not necessarily pathogenic in every case) and they cannot be driven out or destroyed with gold wire, even though it be heated to 212° Fahrenheit.

It were far better to join the procession of the advance guard, hoping for the best than to mislead young students and young practitioners into paths of practice which will surely land them and their patients into difficulties not easy of extrication. Microbes and microbial experimenters cannot be ignored in 1891.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

To the Editor of the Dental Review:

DEAR SIR—Another patriarch has fallen at the age of 79. Dr. Maynard, of Washington, D. C., of Bright's disease. It will be remembered that he was not expected to live when the Patriarch's Banquet was held. Dr. Maynard we never saw but once, but we were much impressed by his marked personality, a man to be inquired after among his fellows.

I have never seen any one who excelled the mark of care he put upon his work. He did not mingle much of late years among his fellows. He did not accept all the new, but held tenaciously to the old, or it may be said more truly, his own methods. At one time he had amassed a plentiful fortune, he being an inventor of note, but he ultimately returned to his first calling as a daily practitioner. He received in his palmy days substantial fees from a class of people who sought his services. I spoke in my March letter of the "a la Maynard" practice of opening a pulpless tooth. As many may not be familiar with it I will describe it. It consisted in opening into any portion of a tooth's structure by which direct communication with the pulp could be gained with the least loss of tooth structure. For instance, be it an inferior molar, an opening by a drill is made and enlarged by a bur directly to the pulp chamber, aiming at the nearest approach to the canal, duplicating this for each canal. This operation has proved in our hands a very feasible method. As in many cases it has occurred that the tooth had been previously filled and for cause the pulp had died, by this operation there was no need of disturbing any portion of the tooth, but for the opening for cleansing out the pulp canals. By a proper antiseptic fluid used in connection with the opening the operation can be carried on not only with the greatest facility and success. In one of the volumes of the proceedings of Odontological Society of New York, will be found an illustration of Dr. Maynard's operations; I do not recall the year. Dr. Maynard makes the third of the number invited to the Patriarchs' Banquet, Drs. Atkinson, Fuller of Peekskill, and Maynard. Dr. Atkinson was truly "Pope" of our calling. We will more and more see this as the months go

by. While we are writing we are reminded that he was expected to be in Washington to read a paper before the Dental Section of the American Medical Association—subject, "Adenoid Growths." We hope the notes he had jotted down during the winter on this subject will not fail to find a place in our literature. He has started a line of thought in this direction which would be suggestively profitable. The profession can have no conception of his intense enthusiasm and earnest thought upon this subject and he was preparing to present illustrations by models from cases in actual practice, and we predict that it would lead to much practical value in a line of practice but little considered or ever known of—Adenoid Growths executed by air-chambers in artificial dentures particularly those of vegetable material.

He did a large amount of preparatory reading with an ultimate purpose for the basis of this paper. His thought was to satisfy himself whether it was of glandular origin. His method of treating these cases has been published both in the published proceedings of societies and in our letters. I was not a little amused, I was much amused and not a little chagrined in reading what was claimed a description of a case and treatment by him. I could not conceive how such a bull-headed statement could have come about. This was, I think, in the February number of the *Dominion Journal*, of Montreal. Such a statement as I saw there could give but mighty little direction in the way of intelligent practice in such cases but such things are not at all uncommon, and yet they ought not to be so.

With the May meetings commenced the administration of Norman the conqueror and if things augur so well in the green tree, later it will bear fruit. Not a full meeting but much of the rank and file were off to Albany to attend the State meeting, yet nearly the average number for several months; twenty-eight were counted. We have never attended a more devoted meeting to its business than this May meeting. The special business was as I had noted, viz:—to act upon the revised by-laws, all of which was amicably carried out and particularly the article referring to the deposit of \$30.00 by a member bringing a charge for supposed violation of the codified law. All we have to say is that it is not a law of the First District Society. A second item of business was the resolutions on the demise of Dr. Atkinson, which I think expressed a great deal, and will be found of general interest. It

must be remembered that this Society was a favored "pet" of the Doctor's which he often mentioned. All dental societies were to him of more than ordinary interest. We are all coming to feel more and more his remarkable devotion to all that could advance our growth. Dr. Dwinelle being the chairman of this committee on these resolution, they were read in his strong sympathetic and oratorical voice which made them very effective. Dr. Dwinelle had in the latter years come into tender relations with the Doctor, and being himself in the waning years, he feels his loss personally. He did not come to know his value in the beginning of his New York career. Dr. Dwinelle stands now as a celebrity among our pioneers.

Dr. Maynard's demise was notably called attention to by Dr. Kingsley as he said he was not a member of the First District Society, but he was a member of the profession in a distinguished sense and was deserving of especial notice. These remarks were feelingly emphasized by Dr. Dwinelle who had known him longer and better than anyone. He knew him as a machinist in Cazenovia, Dr. Dwinelle's birthplace. We add that all who have seen his handiwork will acknowledge its excellency. He was every and all the time a strictly non-cohesive operator, but he was a skilled artist. Dr. S. G. Perry spoke in great praise of his unusual qualities, from personal acquaintance. A committee was appointed to commemorate his removal from us.

The Clinic Committee, a fresh and energetic one, gave a good account of what was done by the operators. Dr. Stanbrough, of New York, by new and special instruments, showed how closely adapted a crown can be placed upon a root by his method, it was like gum work every step, most perfect. Everything he exhibited showed a masterworkman. It looks to us as an advance over anything in the line of crown-setting; all the work is accomplished in the setting by using the pulp canal for a central point from which to work. Dr. Seiler, of New York, gave an exhibit of an impression napkin holder, a modification of the Dr. Geo. E. Hawe's duct compressor. It impressed us as a very useful article for many who are disposed to an eclectic practice.

Dr. Goldsmith, of New York, showed another movable bridge, embodying the ideas of Dr. J. L. Williams, now of London, Brown, Parr and Van Woert, the latter had improved the method of the repair of broken porcelains by a simple method, readily replacing a

new porcelain with a metal groove baked into it, and by forceps or pliers could be compressed to a thin metal flange combined with cement making it fast, with firm joints all with quick despatch, and gain, in these hurried days. Dr. Sill, of New York, demonstrated the use of cement strictly as a non-irritant, action purely mechanical, very suggestive to any ingenious operator. I only give it in this way. It cannot well be described; try it and invent your own way. Dr. Bee, an old Gothamite, now of Auburn, N. Y., is more or less full of mechanical improvement at all times, such as alcohol lamps, wax trays and innumerable inventions, also exhibits of the workings of copper amalgams in active use in the mouth of these black eyes are coming from all directions except from the inventors, these blows are coming from trained and straight out-strikers, and some one is going to get knocked out. In spite of all this Morton's Copper Pluggers were in the exhibit. "Mene, Tekel," is being flashed on the wall for copper amalgams. See statements from such undoubted judgment coming from S. G. Perry, and multitudes of others who know a good thing when they see it. Retrograde metamorphosis this on copper amalgams to the contrary notwithstanding. Well all these reactions will solidify judgment with men that are willing to learn by experience. These things should not throw embryonic practitioners into dismay because of these changes that seem so overturning.

The old and profitable adage: "Prove all things, hold fast to that which is good," intimates to us that we cannot know but by investigation, we admit that perhaps too many are quite previous in their conclusions, older men are finding out the value of experience, and ultimately men of judgment come to be known as safe guides. We say, keep open eyes and good understanding. Accept a little of everything that comes from New York. While we are certain that the highest order of judgment can be found here, yet the other extreme is here also. The same can be said of Jersey. This we saw glintings of at the last meeting, May 18th. They skipped to this month, following the April meeting instead of going over until June as is their custom, only every other month. They joined the Pennsylvania State Society with their State meetings at Asbury Park in July, and are anticipating a flourishing gathering; a rich program in making. The May meeting found 56 at the supper table with a menu of choice viands and genteelly served, all of which was artistically and enthusiastically appropriated. A decid-

edly pleasant feature of this supper was good music, which adds much to the enjoyment of the occasion. At 8:20 President Holbrook rapped order, but the smoke continued. Dr. Ottolengui entertained the Society with a well-written article on "Pulp Stones," here they are and more on the road. The Doctor in the introductory related the fact that he owed much to this Society for bringing him out, commencing back some five years. The Doctor has proven himself a very ardent worker; he is full of vim, and if he does fire off some charges that do not come fully to the mark of "the times" he will only repeat what many have done before him. The only and best way is to keep firing and here and there fruit will fall. It is devotion in investigation and by experimentation which is needed, and in this paper the Doctor gave unusual evidence of it. This is noticeable in his general work. If he is a little dogmatic, he is in earnest, and this we admire. We need more young men going in this way. The Doctor is finding lots of P. S. in teeth, 17 in one, he feels that he has hit on the ability to diagnose them without a miss, viz: "Pulp pain without exposure," and finding that destroys at sight, by arsenic and anaesthetics nitrous oxide mainly when used at all. He closed his paper with this remark, "when pulp has been exposed and bled, never 'cap.' " A very earnest discussion followed. We find at this meeting, as in other quarters, an earnest desire to set down on the practice of pulp capping. Well, we venture to predict that there are those that will continue, by a discriminating judgment to succeed in doing it. More, if scientific knowledge is not going to help us to conserve so important a portion of the tooth as the pulp tissue, then I do not think we are gaining, but I do think that the more science we get into our understanding, the more conservative will practice become in all departments. Mind which is equivalent to knowledge will ultimately hold a commanding sway over all matter, if not, then no matter.

We were told that it would be no evidence to them that a tooth was alive (in our own mouth if we did say so), the only proof they would accept would be to put a drill into it. We told that we had a tooth that Dr. Wm. H. Allen applied arsenic for the relief of a surface sensitiveness, and after some four hours it was dressed off and polished, relieving the condition, and it has done good service since it was done, and this was in May, 1863. I gave this statement in answer to a remark that "arsenic once applied to a

tooth, it was sure death to the pulp." I said Dr. Allen explained to me that he did not hesitate to do this "under judgment," not in young teeth or poorly organized structures, and more I told them I knew of not a few practitioners that confirmed this view by practice; and more, I have done this same thing and found it true. I admitted that it might seem a doubtful practice to announce. We were "sat down on" strongly.

I was told "that would do for old fogies, 50 years ago and that I would live to regret what I had said etc.," well, it will be seen that things were quite lively. I speak of this, for it will go into print and its our conviction. Dr. Evans said "he could not understand why a pulp that had been exposed to the air and decay, should be more doubtful for successful capping than one that had been simply exposed by excavating and bled." We answered that one was in a more or less abnormal condition by adverse associations that would, or did, tend to lessen the resistance to recuperation as instanced, the cut on the body of one, and vice versa. It was a decidedly good opportunity for instruction of wide-awakes—yet there are those that seem to enjoy standing by and calling questions of orders, as Dr. Luckey truly said, "These meetings are for instruction." It does not seem to be so understood by some. Why not?

Visitors to the O. S. rooms will find hereafter an interesting feature. The fine and unparalleled collection, which we have before mentioned, is now arranged in an ornamental case. To have it done scientifically, so it could be thus studied, Dr. Barzett has devoted several days of his time. Full praise is due him for the great energy and talent displayed and proper acknowledgment was made by President Dwinelle at the meeting in a neat speech, so common with him. The notice of Dr. Atkinson's demise was framed in a very unique and original composition by the committee. Dr. Merriam, of Salem, Mass., paid his spring visit to the society, bringing bouquets of rare pansies, cultivated by himself, which he distributed equally. This is a good sign of "liberality" in our profession and from one who preaches it.

We notice in the *London Dental Record*, he has been elected corresponding member of the O. S. of Great Britain, a worthy selection, we think. He will not prove a "dead head" as so many do.

A circus has come to town and it chose for its arena the O. S.

Acids chemicals performed and what did not appear on the programme of the evening, did in the *Sunday Herald*. Well done, if all ends well. Injurious Effects of Vegetable and Mineral Acids upon the Human Teeth, with Some Curious Illustrations. Dr. Geo. Weld gave the subject his undivided attention from a purely chemical standpoint, in the laboratory and in a clinical experience. He claims that all the destructive effects that are as ravenous beasts in a butcher shop, can all be neutralized by the use of Vichy water. There will be a pooling of the issues of Vichy. We were told that the parents have eaten sour grapes, and the children's teeth are set on edge. I do not think the O. S. will get the edge off that is on by so simple a remedy as Vichy. The ferment already caused by the *Herald* was increased by the *Recorder*, another pictorial Sunday paper. Both of these journals put things before the ignorant public with such an incidental hodge-podge, that all decent practitioners will turn away in disgust and no codified ethics can reach the innovator. Names are dragged into this net of big and little fish, whales and kivers, hull points and eels, etc.

The O. S. Ethics are discussed *ad lib*. We are told that any six or eight are competent to fill roots of "dead teeth." One is led to cry out, How long! Where is Noah and his flood. The town is being painted and no red can compare with the crimson that is seen on the cheeks of some of the members of the O. S. for they seem to be the plucked ones. Is it not about time for intelligent bodies to begin to educate the hungry public with sound knowledge? This is our thought of the matter. "Incog. ads." will stir a mush that will nauseate all sensitive stomachs. A person that can write a truthful and intelligent reading article for any of our dailies is a gentleman and a scholar, and has at heart the interest of the people and he is then the one on whom the responsibility can be fixed.

The "May-bees" of ethics will possibly swarm and get hived before June, if so we will report. We have only touched this matter mildly. Good will come of all this. We are not alone in this mighty agitation, everything is on the ferment, the leaven is working out its mission. Let us hold firm in our faith. The whole loaf will be leavened, happy will he be that stands faithful in a few things. Amen, amen.

P. S.—Just as we are closing our letter comes the sudden and

unexpected demise of Dr. James White, editor so long and so ably, of the *Cosmos*. "Part of the host have crossed the flood, and part are crossing now." To the ending of an active career, death is timely. Well other things are getting ready for a burial. We meet to-night one of the most prominent practitioners in New York, and he makes this prediction: *Codified* ethics must and will be *soon* buried. He says the clergy and law have no use for such relics of barbarism. The world is moving. The nearer we can get together the less there will be between us. Ex.

PAMPHLETS RECEIVED.

Comparative Dental Anatomy by W. C. Barrett, M. D., D. D. S., Buffalo, New York.

De La Periostite Alveolo-Dentaire Par Silvio Mela, Genoa, Italy. Travail publié dans la *Revue et Archives Suisses d' Odontologie*.

Souvenir of the Banquet in honor of the Dental Patriarchs. January 31, 1891.

Eighth annual report of the Board of Dental Examiners, State of Iowa, for the year 1890, with a portrait of the late J. Hardman, D. D. S.

S. A. GARBER, Secretary, Tipton, Iowa.

PRACTICAL NOTES.

OUR RELATION TO CHILDREN.*

BY W. M. STEEN, D. D. S., AUGUSTA, KY.

The fact that we are called upon, almost daily to treat children's teeth, places us in a position of greater responsibility than many of us seem to realize, and far beyond the comprehension of parents or guardians, who place their children in our care. The pathological and diseased condition of the teeth of adults, evidently due to maltreatment and neglect in childhood, should certainly arouse the profession to a faithful performance of their duty in the treatment of children's teeth. In presenting this paper to you I shall not attempt to advance any scientific theories with which you are not familiar, but will be content if I can awaken new resolves upon

*Read before the Kentucky Dental Society.

the part of the members of this association, to manifest more interest in the care of children's teeth. A great deal of credit is due members of the profession who are making such progress in restoring and replacing lost dental organs. But can the conscientious dentist do this to the neglect of honest instructions to the children and parents, and thereby prevent the necessity of so much restoring and replacing. But you say we cannot be justly remunerated for the advice and instructions we give. The satisfaction of having done our duty should be an incentive. If we care only for the pecuniary benefits derived from our labor, then we disgrace the profession, and should seek other employment, where the beauty, health and comfort of human beings are not involved.

Rest assured, that we can never inspire a greater interest in the cause we represent to others, than we have in it ourselves. The only thing we can hope to do is to transfer our enthusiasm to them and thereby cause them to become interested. Our duties do not necessarily begin when the little ones are brought into our office to have their teeth examined, but we should be prepared to give instruction to prospective mothers, either directly or through their physician, and endeavor to impress upon their minds that an extra demand is made upon them, and that if not supplied through their diet, their teeth will naturally become decalcified, and those of the child will be lacking in solidity. How often are we asked, what is the reason children's teeth decay so early, and how many of us stop to give them an intelligent and reasonable answer. The next important period is from the time they are supplied with organs of mastication until they are brought into our care direct. How necessary that a majority of parents should be instructed in regard to the proper diet and habits of children. I shall not stop to enumerate the articles of food etc., that should be recommended, but insist that mothers especially should be impressed with the importance of attention to the child's diet, instructing them that systematic habits of feeding, as well as food favorable to the development of tooth structure is essential.

I cannot refrain from condemning the excessive use of pastries and confectionery indulged in by so many, not only at meal time, but from morning until night.

We now come to that period when the little ones are brought to our office to have their teeth operated upon. What is our first duty? I answer, gain their confidence, which, in many instances,

is pretty hard to do, because they have been told wonderful stories by older persons about their experience in our hands and again they are quite frequently deceived, both by their parents and by dentists, a custom which should never be practiced by any one. If we would gain the confidence of children, we must treat them as rational beings; be gentle, honest and reasonable with them, and in nine cases out of ten we gain their confidence and can then easily control them. Children even five or six years old are endowed with a great deal more intellect and reason than we are disposed to credit them with. If by our treatment we cause them to dread the dentist and his office, and thereby cause them to lose interest in caring for their teeth, we do them an injury that will last them through life. There are many good operators who are not qualified to take charge of children's teeth. They fail to sympathize with the child and fail to appreciate the position the child occupies. This leads us to much trouble, as a lack of ability to treat the case from a professional standpoint. Children soon make up their mind as to your disposition toward them. Then if we should be successful in gaining their confidence, then by kind treatment and thoroughness in our operations for them, we will be able to retain their confidence. One of the greatest embarrassments in the treatment of children's teeth, is that the dentist is not consulted until it is too late to do the best which might have been done with earlier opportunity. But like many other things in this life, we are compelled to take things as we find them and not as we would have them. Hence the necessity of doing all that we possibly can to educate parents to an appreciation of earlier and better attention to their children's teeth.

Children usually come to us to get relief from an aching tooth, and when we have relieved them they have no further use for us until they need to be relieved again. But if we allay the pain and put in a temporary filling and instruct the child to return at a certain time and have that removed, and then fill the tooth properly, we have laid a foundation for future work, and have had opportunity to instruct the child or parent upon the necessity of preserving even the temporary or deciduous teeth. It is bad practice when a child comes to you with an aching tooth, to treat that and fill it and leave other cavities to remain unfilled. In that way we are sure to lose our patients, and they will lose their teeth. I never extract a deciduous tooth unless all other remedies fail.

The methods of filling children's teeth (except that they are usually very timid) are more simple than for permanent ones. It requires less preparation, and always using soft fillings the work is very rapidly done. I nearly always use amalgam for all deciduous teeth. Have occasionally used gutta-percha with good results. When it becomes necessary to extract the second deciduous molar, the first permanent molar should be examined very closely, and if there are any cavities they can be better filled, especially if on the anterior surface before the second bicuspid takes its place. These teeth are worth all the care and attention we can give them and we should use our best efforts as long as there is any hope for saving them with living, healthy pulps. I don't believe it is a good plan to devitalize the pulp and fill at so early an age. This might save the tooth for a while, but it is likely to be lost just at the time it is most needed, and when it is too late to bring the second molar into its place.

If we keep a child's teeth clean and the cavities all filled till he is 12 years of age, and have taught him the importance of properly cleansing them, we have contributed largely to his future happiness, and as he grows older he will appreciate the interest you have taken in the preservation of his teeth, and quite likely will reciprocate by manifesting an interest in your welfare.

? ? ?

WHAT SHOULD BE DONE WITH THIS CASE? SEND REPLIES TO THE EDITOR.

Miss K——, age 14, general health fine, very large and vigorous for her age, a sanguineous temperament. Did not erupt her anterior teeth till between nine and ten years old and when she did they had scarcely any enamel on them. The six year molars on the top and sides half way down the crown are the same, only more on order of pit-holes than all lacking. The second molars and bicuspid are perfect, good size, yellow and translucent. Are quite sensitive though only to heat, cold, sweets, etc.

What would you advise for treatment, (expense no object). I thought I would put gold cap crowns on them as her lip is good length and the articulation will permit it as the teeth are wide apart and lack $\frac{1}{8}$ inch in front of touching.

Yours very truly,

H. J. HILL, Alma, Nebraska.

MEMORANDA.

Do you implant teeth at present ?

Creolin will deodorize iodoform, one part to two of iodoform.

Dr. B. L. Rhein is located at 41 Boulevard des Capucines, Paris.

The Michigan Dental Association will meet in July at Sault Ste Marie.

Do you use flowers of sulphur in a dentifrice ? If so, why do you do it ?

The Indiana State Dental Association will meet in Indianapolis, Tuesday, June 30.

Dr. J. W. Cloes, formerly of Jamestown, N. D., has removed to Tacoma, Washington.

Dr. J. C. Culbertson formerly editor of the *Cincinnati Lancet and Clinic* is the new editor of the *Journal of the American Medical Association*.

A death from the use of aconitine is reported from France. It was used to stop toothache internally. The physician was fined 100 francs.

At the regular meeting of the Hayden Dental Society, of Chicago, held May 18, 1891, Dr. J. O. Brown read a paper on "Capping Exposed Pulpes."

Dr. J. Taft is chairman of the section on dental and oral surgery for 1891-2 of A. M. A. and Dr. E. S. Talbot is secretary. Detroit will be the next place of meeting, the first Tuesday in June.

For cold abscess a solution of iodoform in ether is again recommended, after aspiration. For acute abscesses, aspiration, then inject 1-1000 bichloride of mercury. The above are now used in general surgery.

Do you ever replant loosened teeth by deepening the sockets and holding them firmly in place for a month or two with swaged platinum or gold caps ? If not, try it in a favorable case and report results to the editor.

Dr. Thos. Gaddes, formerly dean of the National Dental College, of London, England, has been elected dean of the Department of Dentistry of the University of Denver, Colorado. The university is to be congratulated.

Make a saturated solution of zinc sulphate in water and use it with the powder which comes with oxychloride packages and see how hard it will become; then use it as a foundation for filling or in the pulpless tooth *Crowns*.

Geo. A. Mills, D. D. S., will give post-graduate instruction according to the theories and practices of the late Drs. Riggs and Atkinson, with both of whom he was long associated. Address Dr. Mills at 43 W. 15th St., New York.

Copal picture varnish, which may be had of a dealer in artists' materials, will do to paint over an exposed pulp. Dammar varnish will answer for the same purpose. Try the above. First dry the cavity, and paint with a *bleached* brush.

The Post-Graduate Dental Association of the United States was incorporated in Illinois last month, without capital stock, for scientific and social purposes; incorporators, H. H. Wilson, D. C. Bacon, T. A. Broadbent, L. S. Tenney and R. B. Tuller.

Have you read Solomonsen's "Bacteriological Technology ?" If not, get a

copy and also "Frankels Bacteriology," translated by Linsley. We consider these among the latest and best works on these subjects and are well worth reading and studying.

The Chicago College of Dental Surgery has just terminated a successful practitioners' course. Dr. C. S. Case, of Jackson, Michigan, gave instructions in crown and bridge work and the manufacture of regulating appliances to the satisfaction of the whole class.

The proprietors of "Aristol" give notice that they will prosecute all persons using or making the above named substance unless it bears Schiefflin & Co's. name on the package. Whatever are we coming to if the new drugs also are patented. The medical profession will soon need a "Protective Association."

The *Medical and Surgical Reporter*, one of our most esteemed exchanges has been enlarged and now contains 40 pages instead of 28 pages of reading matter in each number. The *Reporter* undoubtedly will prove to be one of the best of medical journals, under the editorship of Edward T. Reichert, M. D. We wish it increased success.

Have you used fine brass wood screws in setting hollow gold crowns? Dr. W. Mitchell has used them for some years. They may be had from any dealer in cabinet hardware; about four sizes are all that you will need. When the root is filled, either tap the canal or screw them directly into the dentine. When they are enclosed with the oxyphosphate of zinc there will be no danger of discoloration. German silver wire may be cut on a screw plate or with screw forceps, and be used for the same purpose. The end of the screw should be split unless a nut is used to cover the end of the wire. Ash & Sons sell a screw-cutting forceps which answers for the latter very well.

The 7th District or Southwestern Ohio Dental Society, met at Xenia, May 19th (3d annual meeting) and officers elected:

President, O. N. Heise, Cincinnati; vice president, B. F. Johnson, Camden; secretary, J. R. Callahan, Cincinnati; treasurer, C. I. Keely, Hamilton; executive committee, L. E. Custer, Dayton, Will Taft, Cincinnati, J. F. Dennis, Washington, C. H.

Next meeting 3d Tuesday in May, 1892, at Washington C. H., Ohio.

Yours etc.,

W. H. SILLITO.

The adjoining States were well represented at the late meeting of the Illinois State Dental Society. From Missouri there were the President of the Missouri State Dental Association, J. F. McWilliams; T. W. Reed, of Macon; J. W. Reed, of Mexico and W. N. Morrison, A. H. Fuller, J. G. Harper, J. B. Newby, G. A. Bronson. H. H. Keith, J. W. Wick, Geo. P. Holmes and Geo. Robitoy, all of St. Louis. Iowa was well represented by A. O. Hunt, W. O. Kulp, J. S. Kulp, and I. P. Wilson. Minnesota by E. H. Angle and G. V. I. Brown and Edgar Palmer came from Wisconsin. From Michigan, C. S. Case, of Jackson and E. Carpenter, of Grand Rapids. From far off Kansas came A. G. Gray, of Emporia. From Ohio, H. A. Smith, of Cincinnati, and from Pennsylvania J. G. Templeton, of Pittsburg, and from across the ocean, A. A. H. Hamer, of Amsterdam, Holland.

CALIFORNIA STATE DENTAL ASSOCIATION.

The twenty-second annual session will be held in San Francisco, at Palace Hotel, commencing on the third Tuesday in July, 1891, at 10 o'clock A. M., and continue four days.

NOTICE.

The Minnesota State Dental Association will hold its regular annual meeting July 8, 9 and 10, in St. Paul. L. D. LEONARD, Secretary,
73 Syndicate Blk., Minneapolis.

POST-GRADUATE DENTAL ASSOCIATION OF THE UNITED STATES.

Annual meeting of the Post-Graduate Dental Association of the United States, will be held at the Leland Hotel, Chicago, on June 24th and 25th, 1891.
L. S. TENNEY, Sec'y.

WISCONSIN STATE DENTAL SOCIETY.

The above named association will hold its twenty-first annual session at Eau Claire, Wis., from July 21 to 24 inclusive. A cordial invitation is extended to all dentists. CLAUDE A. SOUTHWELL, D. D. S., Secretary.

A NEW ANTISEPTIC.

Microcidine is composed of seventy-five per cent of Naphthalate of Sodium and twenty-five per cent of Naphthol and Phenyl compounds. Soluble in three parts of water. Not injurious to instruments. Ten times more powerful than carbolic acid and twenty times more potent than boracic acid.

ALUMNI ASSOCIATION OF THE PHILADELPHIA DENTAL COLLEGE.

At a meeting held April 9th, 1891, all the graduates of the Philadelphia Dental College during the years '86, '87, '88, '89, '90 and '91 were elected members. Those desiring to accept such membership will please send to J. R. C. Ward, D. D. S. Treasurer, 1905 Fairmount Avenue, Philadelphia, their name, address and one dollar entrance fee.

ALONZO BOICE, L. ASHLEY FAUGHT,
President. Secretary.

ILLINOIS STATE DENTAL SOCIETY.

At the twenty-seventh annual meeting of the Illinois State Dental Society held at Bloomington, May, 12-15, 1891, the following officers were elected for the ensuing year: President, W. H. Taggart, Freeport; Vice-President, Garrett Newkirk, Chicago; Secretary, Louis Ottofy, Chicago; Treasurer, W. A. Stevens, Chicago; Librarian, F. H. McIntosh, Bloomington. The next meeting will be held in Springfield, beginning on the second Tuesday in May, 1892.

LOUIS OTTOFY, Secretary.

SPECIALIST M. D.'S CENTURIES AGO.

A quarter of a century since the average doctor was almost everything. He was physician, surgeon, oculist and now and again in case of emergency would pull a tooth. We are taught to believe that specialism in medicine is a very modern invention. But read this from so old a writer as Herodotus: "The Egyptians have among them a great multitude of physicians. But each man is a phy-

sician of one part of the body only, for one healeth diseases of the eyes and another diseases of the head, and a third diseases of the teeth," Verily, there is nothing new under the sun.—*N. Y. Journal*.

AMERICAN DENTAL ASSOCIATION.

The thirty-first annual session of the American Dental Association will be held at Saratoga Springs, N. Y., commencing Tuesday, August 4th, at 10 o'clock A. M.

GEO. H. CUSHING, Sec'y.

MASSACHUSETTS DENTAL SOCIETY.

The twenty-sixth annual meeting of the above society will be held on Thursday and Friday, July 9 and 19, 1891, at the Natural History building, corner of Boylston and Berkeley streets, Boston. Full programmes will be sent later. Please mark off *now* the dates on your appointment books and endeavor to attend. Members of the profession are invited to attend.

EDGAR O. KINSMAN, D. D. S.

Secretary.

15 Brattle St., Cambridge, Mass.

SPRING LOVE.

The spring is here in glory
And the wild flowers deck the plain.
And the old delightful story
Is told in Lover's Lane,
Where Corydon, just after dark,
Is seen with charming Phyllis,
And love is in their hearts at work,
And in their lungs bacillus.

—*New York Press*.

SWALLOWED HER FALSE TEETH—FOUND IN HER GULLET WHEN SHE DIED TWO YEARS AFTERWARD.

Nearly two years ago Mrs. Mary Green applied for admission to the hospital, says a Bridgeport (Conn.) correspondent of the *New York Sun*, and requested that an operation be performed for the recovery of her false teeth and plate, which she insisted that she had swallowed. After an examination the physicians declared that there was no foreign substance of the kind in the woman's stomach. She declared, however, that she could feel the teeth in the upper part of the stomach, and an operation was performed.

Believing the case to be one of mental disorder, the doctor acknowledged finding the teeth in order to satisfy Mrs. Green. She was better for awhile, but again asserted that she could feel the teeth. She went to New York, where, at a homœopathic hospital, another operation was performed, but no teeth could be found. This morning Mrs. Green died of consumption, and at the post-mortem Dr. Blodgett and his assistants found the plate and teeth in the woman's gullet, about two inches above the stomach. The curved plate fitted the pipe so well that there was no obstruction to her food as it passed down the throat, and the plate was already partly encysted by a growth of flesh over the edge of the metal. The physicians believe it to be the only case of the kind on record.

ST. LOUIS DENTAL SOCIETY.

We, your committee, appointed to present resolutions of respect to the memory of the late Dr. Wm. H. Atkinson, New York City, beg leave to offer the following :

WHEREAS, The members of the St. Louis Dental Society have learned with deep regret of the sad death of one who has been so closely identified with every advance made by the dental profession during the past twenty-five years ; whose honorable career as a professional man has won for him a world-wide reputation and whose personal qualities secured for him the love of every reading dentist in the world.

Resolved, That the St. Louis Dental Society recognizes the obligation dentists of America, owe to the late Dr. Wm. H. Atkinson for the zeal and energy with which he has advocated the many changes which have been for the elevation of his chosen profession.

Resolved, That as a mark of appreciation of the worth of the late Dr. Wm. H. Atkinson, as a man and dentist, these resolutions be spread upon the records of this Society, a copy to be sent to the family, and to the dental journals for publication.

WM. CONRAD,
WM. H. EAMES, } Committee.
J. B. NEWBY,

MISSOURI STATE DENTAL ASSOCIATION.—PARTIAL PROGRAMME.—LOUISIANA, MO.,
JULY 7, 8, 9, 10, 1891.

Papers: 1. Dr. J. F. McWilliams, Mexico—"President's Address to State Association." Discussion opened by Dr. J. B. Newby, St. Louis.

2. Dr. J. D. Patterson, Kansas City—"Medication in the Treatment of Pulp Canals." Discussion opened by Dr. Theo. Stanley, Kansas City.

3. Dr. B. Q. Stevens, Hannibal—"The Preparation of the Mouth, and Plate Work." Discussion opened by Dr. Wm. N. Morrison, St. Louis.

4. Dr. Frank Slater, Rich Hill—"The Devitalization and Removal of Tooth Pulp." Discussion opened by Dr. J. E. Crozier, Lee's Summit.

5. Dr. D. J. McMillen, Kansas City—"Crown and Bridge Work--Use and Abuse of Same." Discussion opened by Dr. T. M. Nicholson, Fayette.

6. Dr. A. H. Fuller, St. Louis—"Preparation of Cavities." Discussion opened by Dr. H. S. Lowry, Kansas City.

7. Dr. Wm. H. Eames, St. Louis—"Review of Dr. Miller's Work, with Personal Observations." Discussion opened by Dr. ———

8. Dr. Geo. L. Shephard, Sedalia—"Dental Fees." Discussion opened by Dr. L. A. Young, Neosho.

9. Dr. J. M. Austin, St. Joseph—"Report on New Appliances." Dr. A. J. Prosser, St. Louis—"Report on Clinics."

10. Dr. I. D. Pearce, Kansas City—"General Anæsthetics in Relation to Oral Surgery." Discussion opened by Dr. L. E. Day, Nevada.

11. Dr. E. E. Shattuck, Kansas City—"Regulating Appliances." Discussion opened by Dr. W. L. Reed, Mexico.

CLINICS.

1. Dr. J. D. Patterson, Kansas City—"Pulp Canal Filling."

2. Dr. J. Stephen Coyle, St. Louis—"Open-faced Crowns."

3. Dr. J. F. Hassell, Lexington—"Soft Gold Filling."
 4. Dr. E. E. Shattuck, Kansas City, will exhibit "Regulating Appliances."
 5. Dr. N. W. Pence, St. Louis—"Gold Filling, Operator doing his own Malleting."
 6. Dr. R. R. Vaughan, Fulton—"Copper Amalgam. Will also exhibit Bridge Work."
 7. Dr. D. J. McMillen, Kansas City—"Soft Gold Filling."
 8. Dr. B. Q. Stevens, Hannibal—"Amalgam Filling, to demonstrate packing and finishing. Will exhibit dies for striking up Face Teeth for Plate Work—Combination Fillings—Pulp Canal Impressions."
 9. Dr. J. T. Fry, Moberly—"Compound Gold Filling."
 10. Dr. J. B. Vernon, St. Louis—"Bicuspid Crown, Porcelain Face."
 11. Dr. T. B. Carr, Stanberry—"Extracting."
 12. Dr. E. B. Crane, California—"The Crane Vulcanizer, and a new method of moulding Rubber Plates. Will also show plates made the old way."
 13. Dr. W. H. Buckley, Liberty—"Small Bridge Richmond Crown Attachments."
 14. Dr. Geo. A. McMillen, Alton, Ill. "Will show the best Foot Blow-Pipe for country dentists—those who have no Gas."
 15. Dr. W. M. Carter, Sedalia—"Gold Filling, Using William's Crystalloid Gold, No. 3."
 16. Dr. Wm. N. Morrison, St. Louis—"Lining Cavities with Gold and Platinum Folds, for Amalgam Fillings."
 17. Dr. Wm. H. Eames, St. Louis—"New Form of Bridge Work. Teeth placed in position after Bridge is completed."
 18. Dr. A. J. McDonald, Kansas City—"Open Faced Bicuspids for Bridge Work."
 19. Dr. A. C. Griggs Warrensburg—"Cleft Palate Appliance."
- The usual railroad rates will be given: a fare and a third on the certificate plan. Be sure to get your receipt at starting point.
- Hotel rates, \$1.00 and \$1.50 a day. A cordial invitation is extended to all reputable dentists; come, and take part.
- Dental depots will be represented. Electrical motors and appliances will be exhibited. Those having new appliances should send them to Dr. J. M. Austin, St. Joseph, Mo.

WM CONRAD, HENRY FISHER, J. W. WHIPPLE,	}	Ex. Com.
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OBITUARY.

DR. JAMES W. WHITE.

Dr. James W. White, ex-President of the Department of Charities and Correction, died suddenly at 7 o'clock yesterday morning, at his residence, No. 2012 Green street. He was just getting out of bed, when he was taken with a stroke of apoplexy, and falling to the floor, instantly expired. To all appearances he was in his usual health on Tuesday.

Dr. James W. White descended from Mr. Henry White, who settled in

Virginia about the year 1645. His son, Henry White, Jr., who was born in 1630, settled in the neighborhood of what is now Elizabeth City, North Carolina. whence his great-grand-son, James White, removed to Tuckerton, New Jersey. The latter's eldest son, William Rose White, married Mary, daughter of Samuel Stockton, a highly respected citizen of Burlington, New Jersey, and a direct descendant of Richard Stockton, the founder of the distinguished New Jersey family of that name, who settled at Flushing, Long Island, some time prior to the year 1656, afterward removing to Springfield township, Burlington county, New Jersey. One of his great-grandsons was the Hon. Richard Stockton, of Princeton, one of the signers of the Declaration of Independence.

William Rose and Mary (Stockton) White had two sons, the late Samuel Stockton White, founder of the S. S. White Dental Manufacturing Company, and James William White, A. M., M. D., D. D. S., the subject of this sketch. The children of William Rose White are also, through their mother, descended from Thomas Gardiner, the first Speaker of the General Assembly of the Provinces of East and West New Jersey. Professor J. William White, of the University of Pennsylvania, is the eldest son of Dr. James. W. White.

Dr. White is also, through his mother, descended from Daniel Leeds, the first Surveyor General of the province of West New Jersey, and from Thomas Revell, a gentleman of good position in Yorkshire, who was among the early settlers of Burlington, and held with distinction many public offices in the province of West New Jersey.

Robert Stockton Green, ex-Governor of New Jersey, is descended from an uncle of the "signer." Among the descendants of Samuel Stockton, of Burlington, may be mentioned the late Rev. Thomas Hewlings Stockton, sometime Chaplain of the lower branch of Congress; Frank R. Stockton, the author; the late Samuel Stockton White, Dr. James W. White, the subject of this sketch, and his son, Professor J. William White, of the University of Pennsylvania.

Dr. James W. White was born in Bucks county, Pa., in 1826. He had resided in Philadelphia since his boyhood, and was graduated in medicine many years ago, but never practiced medicine as a vocation, but only for study and as an aid to his charitable work. He was the senior member of the firm of Hance Bros. & White, manufacturing chemists, and President of the largest enterprise of its class in the world, the S. S. White Dental Manufacturing Company, which employs more than 600 men and women in its several establishments, and with which he was identified for over forty years. His practical philanthropic work was large, but was done quietly and unassumingly.

A more recent example of the results of his labor is the establishment on a firm basis of the Maternity Hospital, of which noble charity he was an organizer and the first President, a position he retained until his death. He was one of the active workers in the Sanitary Fair, and as Chairman of the Committee on Orations and Lectures, secured the very handsome return of \$10,000 toward the grand footing of that great undertaking.

Dr. White never devoted much attention to politics except during the anti-slavery agitation before the war. He espoused the abolition cause at a time when it was both unpopular and dangerous to denounce slavery. He managed the People's Literary Institute for seven years before and during the war, when he presented such lecturers as Messrs. Beecher, Summer, Chapin, Curtis, Phillips, Gover-

nors Andrew and Bellows. He was one of the very active workers in the Freedmen's Aid Society, and was Chairman of the Lecture Committee of the Republican Invincibles.

Denominationally he was a member of the Universalist Church, and Moderator of the Church of the Messiah. His entire life has been one of philanthropic work, and he has been not merely a generous giver, but a close student of the best means of conducting systematic charity and the best methods of correcting the evils that result from poverty.

Among other philanthropic movements with which Dr. White was connected was the Siberian Exile Relief Association, of which he was Treasurer.

On March 20, 1887, Mayor-elect Fitler appointed Dr. White, President of the Board of Charities and Correction.

He entered upon his duties April 1, 1887. He served until May 3, 1889, when he was removed by the Mayor. The conflict which caused this removal created much interest at the time, and it has but lately had a legal climax in the form of a Common Pleas decision which sustained Mayor Fitler's action. The point raised by the Mayor regarded the appointment of the medical staff of the Philadelphia Hospital. His Honor, in order to give other medical schools than the University of Pennsylvania a representative, requested the President of the Department of Charities and Correction to appoint Dr. William F. Waugh a member of the medical staff of the Philadelphia Hospital. President White failed to do this, declaring that according to the civil service rules provided by the new city charter, it was impossible to elect Dr. Waugh.

It was then that Mayor Fitler on looking over the rule, found to his astonishment that, while the Board of Charities and correction was the responsible head of the Philadelphia Hospital, no one but the medical staff had the power to fill vacancies in the latter body. On hearing this, Mayor Fitler informed Dr. White that he would accept his resignation.

Dr. White however, did not accede to the Mayor's request, claiming that the efficiency of the public service was endangered by the Mayor's attitude and declined to resign.

He was, therefore, removed. The question of the Mayor's right to remove Dr. White was freely discussed at the time, but the doctor refused to make it a legal issue, accepting his dismissal in a dignified manner. The question that grew out of this—the application of the civil service rules to the appointment of visiting physicians to the Philadelphia Hospital—was argued in court, and Mayor Fitler was sustained.

Dr. White received his degree of M. D. from the University of Pennsylvania. The honorary degree of D. D. S. was conferred on him by the Pennsylvania College of Dental Surgery, and the degree of A. M. by the St. Lawrence University, of Canton, N. Y. For many years he was editor of the *Dental Cosmos*, a monthly periodical published by the S. S. White Dental Manufacturing Company, of which he has been president since its organization.

In addition to his connection with the firms named, Dr. White was a director of the German-American Title and Trust Company.

Dr. White married at Philadelphia, October 28, 1847, Mary Ann, daughter of James and Maria McClaranan. He leaves, besides his widow, three sons, Dr. J. William White, Professor of clinical surgery at the University of Pennsylvania;

Samuel S. White, of the firm of Patterson & White, printers, and Louis P. White, wholesale jeweler.

Dr. White was a man of strong convictions and courageous in upholding his opinions. He was pre-eminently unselfish; personal sacrifice was to him a pleasure if it promoted the good of others. His relations with his employees were of the most kindly and pleasant nature. From the highest to the lowest in the great establishment of which he was the executive head, the feeling toward him among those employed was that of sincere friendship, and in his death they mourn a friend whose hand and counsel were always at their call.

The following details regarding his death have been made known by the family: In the winter he had a severe attack of a somewhat obscure trouble, which was diagnosed as rheumatism of the throat. From this he recovered slowly, but its effects were gradually wearing away. Tuesday he complained somewhat of an uncomfortable feeling about the heart, but continued to attend to his duties, and was at the office throughout the day. Yesterday morning, on arising, he spoke of feeling "dyspeptic," and shortly afterward, while adjusting his shoes, fell forward, dying in a few moments. Dr. W. D. Robinson was hastily summoned, but the end had come before he reached the house.

The funeral took place at 3 o'clock on Friday afternoon. The interment was at Woodlands Cemetery.—*Phila. Ledger.*

Dr. Allport offered the following resolutions in regard to the death of Dr. James W. White, of Philadelphia.

WHEREAS; It hath pleased the Creator and final disposer of all things to remove from this world Dr. James W. White, of Philadelphia, and

WHEREAS; It is fitting that this Society should make some record of its appreciation of his virtues and of his useful life, therefore

Resolved; That in the death of Dr. White, dental journalism has lost its ablest editor, the business world a member of sterling integrity, the unfortunate and needy a practical philanthropist and the church an exemplar of the nobility of a liberal christian religion.

Resolved; That in their affliction we extend to his bereaved family our sincere sympathy, and with reverent humility we commend them to Him who has promised to be "the friend of the widow and the fatherless," and "a real present help in time of trouble."

Resolved; That a copy of these resolutions be transmitted to the family of the deceased, and sent to the *Dental Cosmos*, *The Dental Review*, and other dental journals for publication.

Carried.

DR. HARLAN: It was my intention to move the appointment of a committee to draft resolutions on the death of Dr. White, and as we now have a suitable tribute of that character, I would like to say a few words concerning Dr. White. It was a shock to me, as it must have been to every other dentist in this country, or in fact of the civilized world, to learn of the taking away of such an eminent and useful citizen and philanthropist as our friend Dr. White was. I learned only on Wednesday, a short time after his death, that he had passed hence, and I felt at that time that a great and good man had gone. He was a man of very strong character, great will, and firmness of purpose, and one who always lived just ex-

actly what he thought was right. His services in the city of Philadelphia, if he had done nothing else, would endear him in the whole world in consequence of their great public importance. He told me one day that during the whole time, from the very beginning of the publication of the *Dental Cosmos* that not a single issue of that periodical, which is now in the 33d year of its existence, had ever gone from the press without his having first seen everything that was to be printed. I think that alone is evidence of his great painstaking and careful method of managing a publication of that character. I have had many private conversations with him relative to matters of interest to the dental profession, and they were always of a pleasant character, and there were two or three times in my life when he was of great service to me individually, and I take pleasure in seconding these resolutions and saying that I feel I have lost a personal friend in the death of Dr. White.

RESOLUTIONS ON THE DEATH OF DR. E. B. WARD.

When death claims a man like Dr. E. B. Ward, it is a loss to the world, a misfortune to his profession, and a calamity to those who knew him best. He had not reached the point in life where time and attainment mark the summit. His face was turned toward the heights and on his brow there beamed the star of hope. In the day dream of life he was yet in the morning and the future held for him the promise of a brighter hour. But he has fallen by the wayside and we his friends can only grieve that he has gone, and place a tribute to his memory among the records of the society which claimed him as an honored member.

We wish to express our appreciation of his many virtues, our bereavement at his untimely departure and our sincere sympathy with his family and friends.

J. A. SWASEY,
EDMUND NOYES,
C. N. JOHNSON,

Committee of the Chicago Dental Society.

Dr. J. A. SWASEY. Pope said. "An honest man is the noblest work of God." Dr. E. B. Ward was the soul of honor; may I say almost a perfect man. He possessed a superior and cultivated mind. His entrance to the dental ranks was an acquisition—his death a loss. He was a man ever ready with voice, pen or purse to do what he could, for he thought the profession worthy to rank high among the professions of the world. When his health failed he regretted nothing more than that he must for a time relinquish active work, for he was in love with his profession.

When at his residence near Richmond, Virginia, last winter, I remarked to him that perhaps it was unfortunate we could not look ahead as in his case in reference to the study of dentistry. He said: "No, Doctor, if I never practice dentistry again, it will always be a satisfaction to me that I took my course in Chicago and identified myself with the Chicago dentists and with the dental societies, for of them I have the most pleasant remembrance and feel amply repaid for all expenditure of time and money."

He bore his great suffering with a patience and unselfishness characteristic of the man. He was a good citizen, a kind neighbor, a true friend and as a husband and father he was worshiped. There are many who will long remember, honor and revere the name of Dr. E. B. Ward.

DR. T. W. BROPHY: I cannot allow these resolutions to go to a vote without

saying a word or two in regard to the life and very brief professional dental career of our friend, Dr. E. B. Ward. It was my pleasure to be the first, I think, among the profession of Chicago to make his acquaintance. He was my patient before a thought entered his mind of ever entering the dental profession. It was with the keenest interest that he watched each step in the operation upon his own teeth, and it seems to me that from that time he resolved to become a dentist. I outlined the course of study that he should pursue, and it was with a great deal of pleasure that I watched his career as a student, the progress that he made, and I feel that Dr. Ward's example is worthy of careful study on the part of young men. He was faithful in the performance of his duties, and manifested an interest in everything pertaining to dentistry. He was one of the few who had engaged in the practice of medicine previously, who felt an interest to study in every case the steps necessary to become a skilled dentist. Dr. Ward was a man—as our friend, Dr. Swasey, has said—of rare ability. This was manifested on every occasion where he had an opportunity to speak, and it was manifested also in his practice. No one became more attached to him than I in the brief period of my acquaintance with him. In the institution from which he graduated, he was most highly connected as professor, and the work he began was thoroughly and satisfactorily accomplished, and was spoken of very highly.

DR. EDMUND NOYES: The gentlemen who have spoken have a longer and more intimate acquaintance with Dr. Ward than I had; but the sentiments to which they have given expression are exactly those which I have always held in regard to him. I have never heard any other sentiments or opinion regarding Dr. Ward, than that he was a man of unusual ability and of high character professionally and personally. He was a man whom we all expected would make his mark in the dental profession, and would bring honor to it.

DR. A. W. HARLAN: I had the pleasure of being personally acquainted with Dr. Ward, and I have only to say that in his early and untimely decease, I feel that one is gone from us who, if he had lived, would have made our profession of more value in the eyes of the world. I have had many conversations with him, not alone regarding the practice of dentistry in general; and from them I gathered that he was a man of varied information, a man who did not confine himself to any single groove or rut, and a man who had the possibilities in him of a great worker.

Death, it seems, has entered the ranks of the profession lately in various ways. Our venerable friend, Dr. Atkinson, died only a few weeks ago; and a little later, Dr. Maynard, one of the oldest and best known members of the profession passed away, and now we are called upon to mourn the loss of a younger brother. I feel that we do but honor ourselves in shedding a tear at his untimely decease.

DR. J. H. WOOLLEY said he endorsed the resolutions that had been presented, as well as the remarks of the preceding speakers, although his acquaintance with the deceased was not very intimate.

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CHICAGO, JULY 15, 1891.

No. 7.

ORIGINAL COMMUNICATIONS.

NOTES ON THE ANATOMY, PHYSIOLOGY AND PATHOLOGICAL SIGNIFICANCE OF PAIN AND OTHER NERVOUS PHENOMENA IN RELATION TO DENTAL DISEASE.*

BY THOMAS GADDES, M. D., L. D. S., Eng. and Edin. LECTURER ON DENTAL
HISTOLOGY AND MICROSCOPY IN AND DEAN OF THE DENTAL FACULTY
OF THE UNIVERSITY OF DENVER, COLO.

It may be said without fear of controversy that no one of the sciences upon which medicine is founded has advanced more within recent years than physiology has done. And perhaps the physiology of the nervous system, considering its supreme complexity and the difficulties attending its pursuit, stands out not the least prominent with its luminous strata unearthed by recent discovery of the greatest importance to the practice of medicine and surgery, is a knowledge of blood pressure in the systemic vessels as controlled through the influence of the vaso-motor nerves upon the small arteries and veins. And the latest induction in this relation is the existence of a similar vaso-motor and controlling function presiding over the pulmonary system of blood vessels. Almost incalculable also is the value of the physiological data spoken of as cerebral localization—that is the knowledge of the definite situations upon the surface or gray matter of the cerebrum which are the nerve centers controlling, through the mind, certain muscles and groups of muscles, as those of speech, facial expression, of the arm, the leg, etc. How those centers, like electric batteries, are connected with one another; that they have a certain resistance to dis-

*A paper read at the June meeting of the Colorado State Dental Association.

charge; that their stored up energy may be caused to overflow to other centers or cells; that those centers situate high up in the brain are connected with others at lower levels and less associated with psychical influence; that the higher centers can be inhibited, restrained or switched out of connection with one another and with lower centers and so on. Consequently upon those increments to knowledge many of the explanations of perverted or diseased action have to be remodeled, not upon the old lines simply but in many instances upon a totally different foundation.

This information necessarily relates to the dentist as well as to the surgeon and the practitioner of medicine; each having the science of physiology for a partial, yet most important, basis of his sphere of action.

Let me preface what follows with these anatomical facts relating to nerve tissues.

A nerve fibril between its peripheral and its central terminations is not branched, nor does it communicate.

The fibers forming several nerve trunks may be rearranged, as in a plexus, but the individual and ultimate fibrils of an axis cylinder do not branch. Any branching that may take place is probably limited to their peripheral and central endings.

The question may arise in the intelligence of some one as to how there can be an anatomy of pain as set forth in the title to this paper. It will be well, therefore, to clear up any such possible uncertainty.

Pain is not a simple, but a compound nervous phenomenon. Pain is a condition of the feelings, and, therefore, of consciousness. It is subjective. Its cause may be objective—as an exposed pulp, the extraction of a tooth; or the cause may be subjective, as in hysteria, the hypnotic and the ideal states. It is affirmed, and truly so, that the phenomena of pleasure and pain are perhaps the most obscure and involved which psychology includes. Notwithstanding that, the structural units out of which pleasure and pain are built, admit of being studied in their individualities and in their aggregations; and also in their simple relations and in their complex relations.

According to Fechner's psycho-physical law, sensations increase proportionately to the logarithms of the strength of the stimulus.

And as we speak of the pulse wave as traced by the sphygmograph in terms of motion, we can also set forth the different as-

pects of feeling in terms of matter and motion. The following sketch diagrammatically presents an incomplete analysis of feeling and the equivalents expressed in physical terms:

Feeling varies	According to cause. It may be	{ repeated—number. different—quantity. varied in degree—quality.
	According to course of impulse. It may be	{ peripheral { thro' one fibril. thro' several fibrils. centripetal { from one center. from higher planes of centers—diffused.
	In character, as in its	{ intensity—amplitude. duration—time. frequency of recurrence—time.

All nerve stimuli are motions, so too are all nerve impulses. Those rapidly recurring and exceedingly delicate nerve shocks; those pulses of molecular change which are made through the nerve substance of a sentient center are regarded as the units of feeling or consciousness. A simple feeling or sensation is composed of units of feeling. A shock or pulse (which eventually produces a unit of feeling) being repeatedly caused, being differently caused, and having varying degrees of causation, and reaching the center by different routes, and by acting upon other centers, thus, it is asserted, gives rise to combinations of simple feelings, and these again are further compounded, ascending to higher and yet higher strata of nerve cells, with the result of there being produced feelings of extreme complexity and heterogeneity both in structure and in relation. G. H. Lewes asserts that sensibility increases according to the extent of the ganglia affected.

Let us ascertain what light can be thrown upon the question by analogy. A given flute note has certain physiological qualities known as pitch, intensity and timbre. A note of a clarinet may differ in each of those qualities. The two physiological sounds are represented by physical (aërial) vibrations of essentially different yet corresponding properties. The pitch has its wave length; the intensity its amplitude; the timbre its secondary harmonic components or overtones. Each physiological effect is represented by vibrations of definite form and structure. The musical sound is the result of the combination of these structures. There is thus an anatomy of sound. Or, again, in listening to a well-trained choir we hear the several parts in harmonic relations; each part having

its own melody, *crescendo*, *diminuendo*, rests and other variations. Those components have certain effects upon the mind as they are perceived through the auditory apparatus. It is thus ordinarily. But the acutely organized musician can realize and produce more or less completely similar effects upon his mind, not by hearing the sounds, but by reading their symbols as presented in the musical score. The notation is the symbolic representation of the musical sounds, harmonies, etc. The chemist too represents the composition and structure of compounds by his symbols; and the isomeric changes, motions or functions of certain substances he also presents to his mind by his graphic formulæ. The astronomer, likewise, by his mass of algebraical calculations, symbolizes the molar motions of the sun, moon and planets. In all these instances there is a symbolization expressing the motions of matter. As those symbols have structural relations, the study of those relations is the study of their anatomy.

Keeping in view the biological axiom that function and structure are correlatives, and that complexity of function implies complexity of structure, we can very readily realize that such a compound combination of feelings as is synonymous with the musical sound just instanced, or with ordinary pain, admits of being studied morphologically—admits of an anatomy. The nature of that anatomy has been indicated.

To resolve the question of the anatomy of pain and other nervous phenomena into its lowest terms I venture to advance the following propositions and induction:

All nerve stimuli and all nerve impulses are motions.

Motion implies a something moved.

Motion, occurring in space and time, is the function of the something—matter.

The phenomena of motion can be presented to the mind by physical symbols.

Physical symbols—as to form, as to quantity, as to quality, as to space, as to time, in their several relations—therefore represent the physical aspects of the anatomy of nerve phenomena.

I would have it distinctly understood that in this paper I am not dealing with the nature or relations of the ego.

Pain may be studied in its physiological and its psychological aspects. All nerve stimuli are motions, so, too, are all nerve impulses. When those motions can be interpreted by physical means they

are, therefore, classed as physiological; but when those nerve disturbances result in, or are followed by subjective phenomena that are psychically interpreted as feelings, then, it is claimed, the domain of psychology is reached. Just as we saw that the cause of pain may be objective and subjective, so also are the antecedent nerve disturbances of pain objective, while the effect produced upon the centers (in consciousness) is subjective and known as a unit of feeling, a simple feeling, or a complex feeling, pleasure or pain. Analyzed in this way it becomes apparent that pain has its physiological or objective side, and its psychological or subjective side.

We are now in a position to state that pain caused by an exposed tooth pulp is not situate in that pulp, as is ordinarily expressed. The state of feeling known as pain has the nerve center for its seat rather than the nerve periphery. We commonly say that we have pain in the finger when it receives a misdirected blow from a hammer, or in a toe when a tender corn meets with the clumsy tread of a well meaning friend. Strictly speaking, the disturbance commencing at the periphery, and becoming augmented in its progress, is received at, and perceived—makes its impression upon consciousness by means of the nerve center. A particular mass of vesicular matter forming the central end of a nerve always receives the impulses from the periphery of that nerve; and there has become established a definite relation between the excitation of such a center and the peripheral ending of the fibril connected with it. In order to make this quite clear let me restate the case. Ordinary impulses traveling along a given nerve fiber from its periphery to its center always, in the normal condition, arrive at a certain cell; and by such action, repeated myriads of times and through countless ancestors, a definite cell area becomes the associated center of a definite fibril. So that on just sufficiently exciting one such central area, or the fibril leading to it, there arise in consciousness those phenomena of sensation and of location similarly as when the periphery itself were the seat of stimulation. Familiar example of this latter is the pain in the third and fourth fingers on striking the ulnar nerve, or "funny bone," at the elbow; also the pain in the toes of an amputated leg. On the other hand, an irritation of a certain area of the brain—as by a tumor, or splinter of bone or electricity—gives rise to similar sensory or motor disturbances. But let the excitation of the center be too great, or the center itself be surcharged as it were, and then the impulse overflows to other

cells and excites them. Thus sensation or pain is referred to quite different regions from that which is the seat of stimulation. Witness for instance a disease confined to one tooth giving rise to pain in several teeth; congestion of the liver, pain between the shoulders, and the various nerve tracks along which neuralgia is often manifested. Or, instead of overflowing to contiguous sensory centers, or even perverting the function of the special centers, motor areas may be excited resulting in reflex muscular twitchings, clonic and tonic contractions, convulsions, and even epileptic seizures.

It will now be perfectly clear that sensation, or the reception into consciousness of sensory impulses, is the function of nerve cells. Therefore pain as a form of sensation is not situate in the periphery, as in a diseased canine tooth, but necessarily in the nerve center. How can the pain which the patient "feels" in the toes of the amputated foot have its seat in those defunct and perhaps buried members.

In strict interpretation of the phenomenon, I do not feel pain in any inflamed pulp; but that sensation in consciousness which I interpret as pain I *refer* to the seat of inflammation, or refer to the lost toe as being the wanted termination of the divided nerve fiber in the stump, or *refer* to the ear in the not infrequent case of overflow from the cells of the inferior dental nerve to the neighboring central cells which supply the external auditory meatus, thus giving rise to earache.

Pain, having an anatomical, a physiological and a psychological basis, serves as an index of a pathological state. The pathological state may be in the nerve peripheries, fibers, cells, or substance, (neuralgia). It may be extra-neural, *i. e.* primary affections of tissues beyond the nervous structures. It may be central, as in delusions, hysteria, and in the hypnotized. In these various ways pain is an indicator of something wrong.

From what has already been said it will be apparent that the individual who suffers pain is by no means a reliable judge of the seat of disease. Patients look upon the seat of pain as the necessary seat of disease. That this is so, recall the several examples already noticed as evidence; also the pain in the knee in hip joint disease; likewise eruptions of the face and scalp in the teething process of children; cases of half the tongue furred, ulceration of the external auditory meatus; affections of the eye, perverted taste—all these latter are often secondary affections arising from nerv-

ous disturbances caused by the condition of the teeth. But this view that the supposed seat of pain is the region of disease is more frequently wrong than right, and the practitioner should ever be on the alert. While he interprets the true significance of pain he must avoid being led away by the patient's localization. Who would dream of treating a varicose ulcer without first giving attention to the condition of distant blood vessels? It is the charlatan who treats effects and ignores causes. Having ascertained the cause of the pain, of the ulcer, of the convulsion—which may be immediate, mediate or remote—and directed treatment for its removal, it is good practice, and practice based upon anatomical and physiological grounds, to apply remedies to the area where morbid action is manifest. For example: A patient complains of pain in the ear; the cause is diagnosed as a faulty lower molar. While the tooth is being treated, which may take some time ere relief is found, benefit not infrequently quickly follows the application of an anodyne to the external auditory meatus. The nerve fibril from the tooth has its central cell or vesicle connected or associated with the central cell of the auriculo-temporal nerve supplying the ear. In virtue of this connection, pain is transmitted to that cell and referred to the ear. It is found in practice that by applying remedies to the area of distribution of associated nerves relief of pain often follows. This is so with regard to the case of the ear, as just cited; likewise with the application of thymol, veratria, aconite, etc., to the course and distribution of a nerve in neuralgia. Also in the treatment of inflammation by counter irritation—the counter irritant inflames the surface to which it is applied, and through the vaso-motor nerves the distant vessels at the seat of critical inflammation are influenced.

It is the possession of what knowledge is attainable as to the *modus operandi* of methods of the kind here noted that distinguishes the educated practitioner from the mere charlatan. Knowledge and the scientific method of thought and investigation are the royal roads to correct diagnosis, successful treatment and professional honor.

THE THIRD PERMANENT MOLAR.*

BY H. N. HOLMES, D. D. S., JOLIET, ILL.

Taking this tooth and attempting to present it in its various phases, from its prenatal condition to its post-mortem exam-

*Read before the Chicago Dental Society.

ination and covering the well-worn ground of comparative, pathological and eruptive exhibitions, we are somewhat forcibly reminded of the view of that noted humorist, Bob. Burdette—he has convulsions when he cuts his first teeth, and as the last one comes through, lo! the dentist is twisting the first one out and the end of that man's jaw is worse than the first, being full of porcelain and a roof-plate built to hold blackberry seeds.

The "third molar" has been frowned upon by the profession and by the laity—for being being late in its development and early in its decay. How correct this stand may be we shall attempt to disclose.

DEVELOPMENT.—Taken during one of the embryonic stages in the development of the teeth, we find that the six posterior permanent teeth in each jaw, three on each side, arise from successive extensions backward of the back part of the primitive dental groove. During the fourth month that portion of the dental groove which lies behind the last temporary molar follicle remains open, and from it is developed the papilla, the rudiment of the first molar.

The follicle in which it is contained becomes closed by its operculum, and the upper part of the newly formed sac elongates backward to form a cavity of reserve, in which the papilla of the second permanent molar appears at the seventh month after birth. After a considerable interval, during which the sacs of the first and second permanent molars have considerably increased in size, the remainder of the cavity of reserve presents for the last time a series of changes similar to the preceding and gives rise to the sac and papilla of the third molar or wisdom tooth which appears at the sixth year.

Calcification of the permanent teeth commences a little before birth, taking place in the lower jaw prior to the upper, the first molar in five or six months, and the wisdom teeth not till after a lapse of twelve years.

The wisdom teeth erupt from the seventeenth to the thirty-fifth year, and even later in exceptional cases, commonly, however, at about the eighteenth year.

Instances are known of these teeth erupting under dentures, more often in the upper jaw, even after it was supposed that all the teeth had been extracted—freedom from their former contracted space allowing them to gradually come down, much to the chagrin of the patient as truly a veritable case of cutting a third set.

Appearing at that age when the functions have taken on a mature aspect and that lump of ergo is full of that wonderful and unwonted activity found in the freshness and verdancy of youth, it is but passing strange that these calcified papillæ at the entrance of the alimentary canal should be signaled as "wisdom teeth"—surely this superabundance of knowledge must find exit in some locality even if in the modest and secluded retirement of the oral cavity.

Often how painful is the entrance of this herald of assumed knowledge, how checkered and unsatisfactory its career and how shocking its departure, leaving its former possessor only an aching void as a temporary reminder of man's natural frailty, and his weakness.

Verily will some one cast the horoscope and tell us the future, past or present utility in nature's economy in the creation of this misnomer, "the wisdom tooth."

SHAPE.—The crown is small and rounded, and furnished with three tubercles in the upper, but the lower being considerably larger than the corresponding ones above, and in some instances nearly as large as the superior second molars, the crown is proportionally of greater size.

They are very little if any smaller than the first lower molars which they greatly resemble in crown, having five cusps similarly situated.

The roots are generally confluent and curve strongly back toward the angle of the jaw, but in exceptional cases where the jaws are very fully developed ("lantern-jawed," if you please) there will often be a two-fang implantation and the whole tooth in a state of development compatible with that of a typical molar.

But among the more civilized races it may be almost be said to be exceptional for the third molars, *dentes sapientiæ*, or wisdom teeth to be regular either in form or position. So that extreme variability prevails among these teeth.

The roots of some are so confluent as to form an abruptly tapering cone, the apex of which is often bent and crooked so that but little vestige of the two or the three roots can be traced, the pulp cavity even being quite single.

COMPARATIVE.—It is stated in Professor Owen's "Odontography" that although the wisdom tooth is the smallest of the three molars, the difference is less marked in the Malayan than in the Caucasian races, adding also that the triple implantation of the

upper and the double implantation of the lower is constant in the former races.

More extended observations have overthrown this statement as a positive dictum to be accepted without exceptions, but it may nevertheless be taken as expressing a general truth.

In passing from the highest of the apes to the lowest of mankind there is a sudden change in the character of the dentition; but while it cannot be admitted that there is a gap, yet the differences are rather of degree than of kind. Of the anthropoids, the gorilla approaches most nearly to man, except in dentition, the teeth of the lower jaw perhaps showing the nearest relationship, the third molar attaining a very large size.

In the male chimpanzee and orang the wisdom tooth appears before the canine, whereas in the female this sexual weapon follows the second, but precedes the third molar.

This sexual difference in the canine teeth is well marked in all the members of this branch of the ape family, and its later eruption in the males is explicable both upon the ground that, being a sexual weapon, it is not needed prior to the attainment of sexual maturity, and also, being of a very large size, its formation might be expected to take a longer time.

No such difference pertains to the milk dentition, in which the order of eruption is exactly that met with in man.

The coronal aspect and root attachment vary but little from that of man, except that the surface of the lower molars is marked by that finely wrinkled pattern which is common to all unworn teeth of the orang.

It is generally said that in man the molars decrease in size from before backward; that is to say, that the first molar is the largest, while in the anthropoid apes the contrary is the case.

While this is on the whole true, it requires some qualifications: thus in certain lower races, such as the Australian blacks, the second and third molars are not smaller than the first and of the chimpanzee the same thing may be said.

One of the particulars in which the lower races of mankind differs from that of the higher is the ample space in which the wisdom tooth has to develop and range itself with the other teeth. It is a characteristic upper or lower molar, the pattern of its grinding surface (quadricuspid if it be an upper, quinquicuspid if it be a lower tooth) and the disposition of its roots corresponding with the first

and second molars, which do not greatly exceed it in size.

Specimens of negro skulls may be found in which there is scanty room for the wisdom tooth, and in which consequently it is a little stunted in its development; on the other hand, plenty of well-formed and well-placed wisdom teeth may be picked out of European mouths, though as a rule the wisdom tooth is much smaller than the other molars, does not bear the characteristic cusps and grooves, has its roots connate, and it is not very infrequently a mere rudimentary peg.

The stunted development of the wisdom tooth would seem to be a consequence of want of space during the formative period; the upper wisdom tooth is especially apt to be cramped in this way.

There is some little evidence that the wisdom tooth is in process of disappearance from the jaws of civilized races: in anthropoid apes the wisdom tooth is nearly or quite as large as the other molars, and shows no variability, while it comes into place almost simultaneously with the canine; in the lowest races of mankind the wisdom tooth appears to vary but little, is of large size, and is seldom misplaced; in highly civilized races it is very variable in size, form and in the date of its appearance, is often misplaced, and is not uncommonly quite rudimentary.

It seems to be a legitimate inference that a further modification of the race in the same direction will result in the disappearance of the wisdom tooth altogether.

Some exceptions must, however, be taken to such general statements; thus the Esquimaux not uncommonly have the wisdom teeth small and sometimes crowded out of place, and among the African races instances on the other hand of the wisdom teeth being small and on the other of fourth true molars existing are to be met with.

Apart from the race distinctions different nationalities present peculiarities which agree with each other in the main according to development of the jaw, condition and character of nourishment in early life, but not as to the individual's lodgment on the different social planes.

It cannot be said that upon the whole the poorer classes present a more perfect articulation than do the more favored ones, nor do all the deep and massive jaws of the criminal classes show an expected and more nearly correct development.

We cannot decide from the models arranged before us which is the Russian, which the German or the Frenchman, which the Englishman or the Irishman, or a Knight of the Mafia, which the native of Chicago or of New York, which the maid, which the mistress, which is madame and which is monsieur, nor which is the coachman and which is the financier by the number of molars and their arrangement.

Drawing conclusions would in the general result obtained virtually amount to guess work.

The Bertillon system of measurements and the composite photographs of the different conditions and sexes cannot be made sufficiently reliable to form a basis of accurate judgment.

Nevertheless, for the present period at least, a case in which the wisdom teeth are very small can hardly be called a typical well-developed American or European mouth.

CARIES—The coronal surfaces of the upper teeth form a graceful curve in their natural symmetry with the wisdom tooth at the upper end of the curve, making it almost inaccessible to the bristles of the brush in morning ablutions.

The wisdom teeth universally viewed as being most predisposed to caries, derive such tendency from a twofold direction. Developing at a period when the formative force is losing vigor, these teeth are commonly deficient in the amount of that inorganic material which constitutes what might be called the mechanical resistance of the dental organs; in structure they are found comparatively speaking, loose, while their general resistive power is low; they might indeed be likened to the osteophytes which form after bone operations, and which represent so imperfectly the tissue replaced, being found unable to resist antagonisms not at all injurious to properly formed tissue. Again, as a local signification is concerned, these teeth making their appearance at a period when all the others are formed, find so little room in the arch as to render the process of eruption difficult, slow, and in some cases impossible, hence not only is a chronic morbidity engendered, but the face of the tooth is in many instances so long overlaid by an unabsorbed operculum that a perfect pocket exists, constantly filled by ingesta.

The peculiar lesion which a half erupted wisdom tooth presents on looking into the mouth is that only the anterior face of the tooth is fairly shown, the other two-thirds being overlaid by the integument of the ramus. There may be existing in this tooth, only a

single cusp of which is through the gums, caries extending to its pulp cavities or the most aggravated form of periodontitis.

It is the common impression that wisdom teeth decay early ; that they are not a substantial class of teeth.

The fact is that four-fifths of these organs which decay so soon have been destroyed by the operculum of gum under which collect decomposing epithelial scales, and acidity engendered of their disintegration to corrode the structure of the tooth thus quickly destroying its integrity.

Numbers of cases can be called to mind illustrative of this fact, and if this fleshy lid is dissected off, the proper treatment by the way, and the sulci of such teeth examined with a delicate probe, in nine cases out of twelve will caries be found.

An important secondary relation may be recognized from this lesion, namely, that of odonto-neuralgia, the diagnosis of which has been as varied and erroneous as the remedies employed.

The teeth in such cases probably had not escaped observation, but had been examined and pronounced sound. In such mouths not infrequently will be found this operculum of gum overlying the wisdom tooth, which on being dissected off exposes compound caries. Extraction quite satisfactorily relieves a patient of his odonto-neuralgia.

The principal points of attack of decay are in the central depression between the cusps, along the posterior longitudinal fissure, upon the buccal and approximal surfaces.

In buccal decay of much extent it is seldom worth while to attempt treatment by filling. In approximal decay, especially upon inferior, when the tooth is retained, there arises the danger of causing decay upon the posterior approximal surface of the second molar which is likely to extend deep into cervical border, seldom showing upon coronal surface till a large body of the tooth substance is involved, and when filling is required or attempted there is an almost inaccessible cavity to operate in.

ABSCCESS.—Alveolo-dental abscesses are not infrequently associated with the eruption of the wisdom teeth.

The arch being so small that when the third molars assert their rights to enter there is not room enough and hence an intense irritation is caused, generally resulting in an abscess which discharges about the neck of the tooth. Sometimes, however, they void themselves in other situations, as for example, upon the face or neck.

An inflammation extending from an ulcerated wisdom tooth may sometimes cause a mistaken diagnosis for tonsilitis, and an erroneous treatment for a longer or shorter period.

To illustrate another mistake in diagnosis by a case in practice: A patient had suffered some time with heavy, dull pain in the right half of the lower jaw, attributed to two teeth much decayed both had been treated and filled.

Inflammation of a severe character finally developed, and in defiance of all treatment, ran on to abscess. which abscess discharged upon the neck. Lancing and voiding the pus gave some relief, but the sinus continued to discharge, and occasioned much annoyance as well as deformity.

Not till the removal of an erupting dens sapientiæ, a single cusp alone of which presented, did the fistulæ heal, and then in a single week.

In other cases there will be a periodical swelling in the region of the tooth, occasioning great pain, coming and going apparently with the changes of the weather, and continuing to occasion a disturbance till the ultimate removal of the offending molar.

In the superior maxilla there is found a tuberosity of bone, occupied in part by the wisdom tooth and a point of surgical interest, it being not at all uncommon to have necrosis of this portion, the result of an ostitis, induced and kept up by an imprisoned dens sapientiæ, standing, as it is seen to do, tubercle like, it is plainly evident that neither deformity nor harm could result from its separation as a sequestrum.

TRISMUS DENTIIUM.—But abscesses are not the sole termination.

The arch being too small to accommodate the advancing organ, it becomes as a matter of necessity an agent of irritation; inflammations of the most severe nature are thus oftentimes provoked, inducing too commonly trismus and abscess.

The troubles of an individual afflicted with a contracted dental arch are most apt to begin at about the fifteenth or sixteenth year of age.

In examining such a mouth you find the teeth crowded into the most uncomfortable positions. The last molar of the lower jaw you will see quite likely jammed into the ramus, while the same tooth of the superior jaw is found occupying the very extreme of the tuberosity of the bone.

At this period, unless fortunately the teeth are possessed of uncommon resistance, they will be found to be breaking down from approximal caries, while, as the result of such caries, combined with the crowded condition of the roots, the alveolo-dental membranes enter into a subinflammatory state, and become as ready to take on acute disease as is tinder to respond to a spark.

If then interference with the elongatory processes has been such as to yield these troubles when only twenty-eight teeth have been erupted, it is plain that the development of the four dentes sapientiæ must proportionately add to the difficulties. The character of such troubles would lead to the inference that the lesions must be periodontitis, alveolar abscess, stomatitis, otitis, caries, necrosis, or trismus.

Case after case of unappreciated local trismus has been reported, of the lesion being referred to this cause, and the other cause—the treatment being as various as the diagnoses.

Medical men, and with all some members of the dental profession seem to delight in shrouding such cases in an abstrusely explained mystery, while in reality the cause of such *trismus dentium*, and consequent ankylosis of the jaw is the train of troubles resulting from this impacted third molar. The jaw becomes maintained in a fixed position from the rigidity of the muscles closing the jaw produced by an inflammation; and as a consequence the antagonistic muscles become inadequate to the effort of opening the mouth under the mere influence of volition.

Suppurating sore mouth and throat precedes, excessive inflammation attends, and convulsive movements follow affections of this nature.

As soon as the jaws can be separated, the speediest way of which is by mechanically breaking up the adhesions by introducing forcibly a pine wedge, or another method by galvanism, all this trouble will be found emanating from a wisdom-tooth projecting as it were, from the very angle of the jaw, and half covered by an operculum of gum drooping over on it from the ramus.

Under treatment (extraction) this lesion disappears, if no inflammation supervenes, as if by magic.

Poultices and like fomentations of a paliative treatment, while being a seductive method of allaying pain, are fraught with danger especially in the lower jaw, of producing upon the face or neck that great bug bear—a fistulous opening—hence extraction.

TREATMENT.—It has been demonstrated that the attempted saving by plugging with any of the filling materials is not practicable as a permanent success. Not only is such an operation attended by all the inconveniences that endanger a perfect plug, both from the almost inaccessability of the cavity, and the difficulty of excluding moisture, likewise the uncertainty of the direction of the root canals in case of devitalization, but the annoyance to patient and operator is mutual.

Filling the wisdom teeth cannot therefore be recommended.

Of course this view is taken when all the molars are in position.

When any have been extracted, presumably the first molar, then the wisdom tooth is to be preserved from the inroads of decay in the best manner possible.

Or should the jaw be well-developed, the tooth standing free from the thick integument of its region and all the teeth in position, the cavity subject to a promising plug, then the advisability of saving it should be considered.

Otherwise upon the symptoms of dissolution, or signs of future trouble, *extraction* is the most feasible method of relief from what promises to be a never-ending source of irritation.

FORCEPS.—Instruments for extracting this tooth must be so constructed that when the crown of the tooth is grasped in the beak of the forceps it will be directed backward, thus making the organ roll in a wheel-like fashion as it were from its socket.

For this purpose the bayonet forceps, with the uppers, seems to meet the requirement; in any event the application of force must be in the direction of the axis of the root. The cow-horn beak, the right angle beak for small ones, and the so-called Physick's dentes sapientiæ after the pattern of the late Prof. Physick, are the principal patterns. But this latter instrument, the distinguishing feature of it is its being constructed upon the plan of a double inclined plane which necessitates its application between the tooth to be extracted and the one directly anterior to it which serves as a fulcrum, not infrequently so crushing the enamel and exposing the dentine as to lead to caries.

The cow-horn may be used on lowers to loosen the tooth by introducing the beaks between the second and third molars the latter being wedged by means of a warm stick of gutta-percha allowed to harden, in case of the absence of an adjoining tooth, and very grad-

ually closing the handles—extreme care being taken to avoid any pulling movement of forceps, the principle being to loosen and roll the tooth upward when it can be removed by any suitable forceps.

It meets with similar objections to the Physick. When this latter elevating forceps is used, the beaks or jaws should be at nearly right angles to the handles, so that when the force (closure of the handles) is applied, the mouth may not be unnecessarily stretched as it must be when the pattern is used having the beaks at an angle of 45° .

It is presumed that the other molars are in place when attempting the use of this instrument. Care must be exercised when the tooth is deeply imbedded not to force it further into the soft structures.

The ordinary key instrument, when lightly and delicately made, answers a very admirable purpose with this class of teeth.

Thus have we considered in a rather heterogenous manner, as best our experience served us, and the painfully scant literature upon the subject would aid us in our endeavors, the subject of "the third permanent molar."

No less finale do we come to than this: that if the first molar can be saved and the wisdom tooth is amenable to any of the disturbances already set forth—caries or otherwise—remove the offending wisdom tooth; otherwise in event of the extraction or loss of the first molar or other teeth at a reasonably early period and allowing for the others to fill the space, the third molar should be saved to add comfort in mastication and symmetry to the face.

THE FIRST MOLAR.*

By H. B. TILESTON, D. D. S., LOUISVILLE, KY.

The first, or sixth year molar has been the subject of more essays and discussions than any other member of the dental family. Within the last decade it has passed, at the hands of various writers, through every stage of treatment, from total and uncompromising destruction, to religious conservatism; it has been denounced as a useless incumbrance to the dental arch, an insult to the intelligence of mankind at the hands of an unwise creator, on the one hand, and extolled as the pillar of the arch, upon the other.

It would seem that the subject has been so thoroughly exhausted as to leave nothing more to be said, and indeed I feel almost called

*Read before the Kentucky State Dental Society.

upon to apologize for again presenting such an antiquated chestnut (excuse the expression, it is an apt one) to the consideration of this intelligent assemblage. My object in doing so is not to advance anything new, but rather to bring again to your attention some ideas concerning the first molar advanced recently by more original minds than mine, in the hope of stimulating discussion that may result in benefit to many of us.

About the only question considered in discussing the first molar is the one of extraction.

First: Shall the first molar ever be extracted except when extensive decay has rendered its preservation impossible. And

Second: If from any cause extraction has become necessary, at what period in the development of the teeth shall it be done?

In addition to the importance of the first molar as a masticator (being the largest of all the molars, its value in the work of mastication should rank first) it has a function, which at the time it is exercised is infinitely more important.

Dr. E. A. Bogue, of New York, in an essay in Vol. 31 of the *Dental Cosmos*, August number, entitled, "A study of the visible changes that take place during the development of human teeth and their alveoli," points out the functional value of the first molars, as the support of the jaws during the shedding of the temporary and the eruption of the permanent teeth.

The sixth year molars appear and assume their positions in the jaws long before the temporary teeth begin to be shed, and they have come thus early in conformity to a wise provision of nature, that they may establish and maintain the normal relation of the jaws to each other—what we are accustomed to term the "bite."

While the temporary teeth are being replaced by the permanent, it often happens that by the early decay of the temporary, or their premature extraction and the slow advancement of the teeth of replacement, broad spaces occur where there is no contact between the upper and lower teeth for months. Were it not for the presence of the large, strong abutments furnished by the first molars, the pressure of the jaws upon the young, growing teeth would prevent their full development, and the bite would be shortened, with consequent excessive overlapping and protrusion of the upper front teeth. More than this, the first molars continue to rise higher as they develop, until they establish a line considerably above the level of the temporary teeth and carry their alveoli with them, and

thus fix the length of bite and relieve the smaller anterior teeth of undue pressure until they have attained their normal plane.

The evil results of the extraction of the first molars, especially the shortening of the bite and the interference of a normal articulation of grinding surfaces, is excellently shown in the illustrations of cases in Dr. Bogue's paper and also by the illustrations in Dr. I. B. Davenport's paper on "The Dental Arches of Man," in the July number of *The Cosmos*, Vol. 29.

After the completion of the first dentition, the elongation of the jaws is mostly due to growth back of the temporary molars, to provide for the three permanent molars. The early extraction of the first molars, prevents to that extent the normal growth of the jaw, and may result in many cases, especially with females, in a noticeable deformity of the features.

In view of these facts, and they have been ably demonstrated as facts by Dr. Bogue, Dr. I. B. Davenport and others, does it not appear to be our duty, our sacred duty, to exert our utmost skill to preserve the first molars of our young patients?

At that critical period, when the jaws are so dependent upon their support, if we find the first molars so badly decayed that their grinding faces are completely destroyed, which is frequently the case, we should build them up by crown, or contour of amalgam, so that their height shall be normally restored. In such work we have a useful ally in copper amalgam, which may be so manipulated as to set quickly, and make a contour secure before the patient is dismissed.

If the teeth are of such a character as to promise but slight or no hope of permanency, and we feel confident that they will be lost early in life in spite of anything art can do for them, then it is our province to choose a time for their extraction when the least damage to the arch will result.

When is that time?

Dr. Davenport says the least injury will be done if the first molars are extracted at about the time of the eruption of the second molars.

In most cases such a time is probably the best, for the reason that the second molars will then move forward bodily and take the places of the first molars instead of tipping over toward the bicuspid, as is the case when extraction is resorted to later.

But it sometimes happens that the second molars begin to

make their appearance before the length of the bite has been attained by the teeth anterior to the first molars, and the jaw is still dependent upon the first molars for support, in which case, and in the light of our knowledge of the function of the first molars, it would be inexpedient to extract them at that time, even for the sake of securing the bodily advancement of the second molars. It were better to postpone extraction until other teeth have attained a height equal to that of the first molars upon which the jaws may find proper support, and then we might hope to avoid the evil results indicated above. Of two evils we choose the lesser.

THE PROTECTION OF THE CERVICAL BORDER IN FILLING.*

BY DR. A. W. FREEMAN, CHICAGO.

The soil underlying this great city is somewhat varied, consisting of a fair amount of black earth, then varying thicknesses of sand strata or drift; then clay strata sometimes only a few feet thick, then again thirty, forty, fifty feet in depth; and even down as deep as our water tunnel levels—and more; while occasionally there is a substratum of limestone rock.

Therefore the conditions of the earth are so varied that none of our recent sky ascending buildings are begun without laying their foundations deep and broad upon many strata and cross strata of thick concrete and iron intermixed so as to make the foundations firm, and preclude the possibility or the probability of the walls of these great structures changing to their hurt or ruin.

As quicksands or moving clay are unreliable to support heavy buildings, so is it equal folly for us dentists to expect permanency of our work if the cervical foundations of our structures are not most carefully and thoroughly prepared.

I suppose "protection" in our subject means, first—the proper preparation of this border; second—the careful manipulation of the material, used to cover it; third—the consideration of the best materials for this end; and fourth—the care of the gum margin and indirectly the peridental membrane.

We could add the contouring or shaping of the filling so that the cervical margin can be easily cleansed, or made self-cleansing.

Now we do not propose to elaborate separately all of these heads of this important subject, for any one of them would make

* Read before the Hayden Dental Society of Chicago, 1891.

an essay—but to say a few words that may bring out some of your bright ideas and especially to get the experience of our worthy professional friend, Dr. E. Noyes.

Approximal cavities usually need to be cut well toward the buccal and lingual surfaces of bicuspid and molars and these cervical angles should be left slightly rounded to insure the better introduction of our filling material—leave no sharp or crumbly edges. We would leave the thin enamel at the neck margin of the tooth if it is sound—as it is easier to finish the fillings more perfectly when we can leave it than when it is removed.

If it is soft we must cut it away, and pretty well down on to the cementum or root portion of the tooth, as teeth are not as apt to decay up under the gum margin as at its surface, where acid mucus is often secreted. Good space is required in order to see and properly fill such margins. The gum will usually have to be crowded back by using gutta-percha, cotton or cotton dipped in a solution of gutta-percha and chloroform, or in thin oxyphosphate or thick sandarac varnish.

In the former class of cavities where the enamel and dentine are good or fair (if of a young person), we prefer soft gold at our margin, which had better be introduced in pellets or cylinders or thin mats and by hand pressure gently and firmly made, but not of such force as to endanger the delicate enamel we wish to protect.

In the angles you can use a small piece or two of cohesive gold torn off from the sheet and crumpled between the pliers and thumb and finger of the left hand, or a piece of Rowan's No. 30 which is very soft and cohesive—this will occasionally prevent a trifle of gold being torn away at these points in finishing up fillings.

If teeth are soft we would use tin and gold or amalgam at these margins—and where they would not show in the entire cavities. We do not like to build on gutta-percha, but sometimes use the chloro-solution at this margin as well as to protect the pulp from thermal changes. We think tin and gold is rather harder after a time than tin alone, while it is just as readily adapted to the neck of the tooth.

In filling margins where they extend down onto the cementum we would use tin and gold, or amalgam; as they are a little more easily dressed off than gold, and often have a therapeutic effect to harden the dentinal layer next to them.

If we are to finish with gold we often use a matrix and leave it

on the tooth over night and finish up the neck part of the filling before we fill the main cavity.

Gutta-percha, red, is a fair filling for soft teeth and will in most cases keep the neck margin better than oxyphosphate which is so often removed by acid secretions at the gingival border. In some cases dentine seems to harden up under oxyphosphate fillings, but if they are near or in contact with pulps they are almost sure to die. (Let me wander here a little and say use in such cases chloro-balsam of fir or chloro-percha near the pulp) as a protector from the deadly acid.

In the six anterior teeth and often between the cuspids and first bicuspid it is necessary to use gold at the cervical margins for æsthetic reasons.

On labial surfaces we would press to the upper border of the superior teeth a pellet or pellets of gold which when flattened from below will stand out considerably beyond this margin, and hold them carefully in place until the wedging of other pellets from below secures them firmly in place, then bind with thick or thin cohesive gold, after condensing the gold most carefully around the entire borders of such cavities to prevent any breakage of the enamel.

Lingual cavities of the inferior teeth are not very common, but of the superior molars often run up under the gum and onto the palatine root.

These are difficult places to fill, especially as most of our cervix clamps are of little use. A rope or pellet of tin and gold can be held against the upper border while an assistant can hold back the dam and gum with a "homemade" instrument until your filling is secure.

In these places we often use amalgam, also amalgam for posterior buccal surface cavities which are shallow and high up. Copper amalgam is preferable in most cases, but disintegrates or has surface waste in others.

It is a good plan to hold the cervical portion of gold or tin and gold fillings with an instrument in the left hand to be sure it does not move as you press near or at the opposite border of the cavity. All gold which moves or curls from its place must be discarded even if you have to begin your foundation over again.

A pellet large enough to extend over and against the opposing tooth can often be used to good advantage, said tooth acting as a

matrix. Use instruments with medium or broad faces to condense the first or cervical gold so as to press down and condense it rather than cut through it with thin points.

The cervical portion of some fillings can be well finished before the main portion is inserted.

All cervical margins must be flush with the borders and so carefully finished and polished as to preclude lodgments for food or acid mucus, by any overhanging portions of the fillings. In teeth where decay runs low down or high up under the gum margin we often insert a cofferdam filling and let it harden or remove pulps or attempt to fill roots. There is little hope of success if our pulp cavities cannot be kept dry until roots are carefully prepared and filled.

The gingivæ require careful treatment after wedging, and after the use of ligatures, clamps, etc., it is best to use a soothing application such as a mixture of carbolic acid 95°, 6 m. Tinct. iodine, 45 m. Glycerine, 1 oz. Distilled water, 5 ozs., or when pulps have been removed of aconite and iodine equal parts, to check the after pain or inflammation of the peridental membrane. If we can get along without, we prefer as little crowding or wedging of the gums in scrofulous patients as is possible, for once separated from the necks of the teeth they may not return to a firm union and healthy teeth require healthy gums.

The use of listerine, a teaspoonful in a half cup of water, to rinse the teeth at bedtime is said to have good effect in removing or preventing the approach of those white lines which we so much dread at the cervical and labial margins of the teeth.

Perhaps a small amount of phenol sodique in water would answer the same purpose.

The use of pieces of spunk will often help tide us over difficult places and enable us to make a fair filling when we cannot get rubber dam on some posterior teeth. Remember a bicuspid clamp will sometimes stay on a wisdom tooth when others slip off, enabling you to use the dam for more thorough treatment.

The new Ivory clamp is excellent for many cervical fillings.

Do your best and you will have the consciousness of duty done, even though you be disappointed in finding that to endure which you expected to fail, and that to fail which you expected to last ; for the conditions surrounding our work are not always fixed and are often beyond our control.

PROCEEDING OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

Regular meeting, May 5, 1891, Dr. D. M. Cattell, President, in the chair.

DR. H. N. HOLMES, of Joliet, read a paper entitled "The Wisdom Tooth."

DR. J. W. WASSALL, in opening the discussion, said: I am very glad of the opportunity to thank Dr. Holmes for his excellent paper. I have listened to it with a good deal of interest. I think it is a good model for authors of other papers to follow. I was impressed by the thoroughness and the comprehensiveness with which the subject was treated. It gives us matter which is valuable.

The most interesting part of the paper to me was his comparison between the third molar of civilized man, with that in the uncivilized or lower races of genus homo, and also of the apes, showing the deterioration or retrogression of the human third molar by the process of evolution.

The question of filling third molars is one which we all have to face, no matter how often we would like to avoid it. Besides the welfare of a denture is generally best served by their retention. We know that in the case of our own mouths, for instance, we would rather have them saved than extracted, and we will find that our patients take the same view of the subject. There is one method of filling this tooth which is comparatively new to us, a method which I find especially valuable in the large cavities involving the buccal and grinding surfaces, I refer to the lower third molars particularly, viz.: the inlay.

DR. LOUIS OTTOFY: I wish to compliment the essayist on the able paper he has presented. I hope it is the first paper of a series such as we shall have throughout the entire year.

I understood him to say that when the first molar is badly decayed he advocates its extraction with the hope that the second and third would fill the space. I think that practice, as a rule, is reprehensible. I do not think that with the methods we now have of saving the first molar that it need very often be extracted, we do not gain by that practice as much as we desire. As a general rule the articulation becomes disturbed, both by the dropping of the

teeth backward, forward, inward or outward. The second and third molars do seldom as properly articulate if the first molars are absent as when they remain. Also, unless the second molar moves forward we will lose an extremely large tooth, and one which is better adapted for mastication than any other, by virtue of its location and the relation that it bears to the fulcrum and the muscular power exerted by the jaws. We can exert more force at that point than anywhere else, hence when possible, it is not good practice to extract that tooth with the hope of having some other tooth do as much good.

Another thing: I am in favor of saving the third molar, and I endeavor to remove that impression which a great many people have that the third molar is a poorer tooth than the others. It is an error, I think, to allow people to believe that the third molar is a much inferior tooth to all of the others. Therefore I am always in favor of attempting to save and recomend the saving of the third molar.

DR. J. G. REID: I do not believe there is any infallible rule that can be laid down to govern us in either saving or extracting wisdom teeth. My opinion is that it requires simply good, common, every day horse-sense to know what to do with the third molar. We have to meet the indications. In some cases we have to extract this tooth; in others we can save it. A good many of you have doubtless had the same experience that I have had for the last two years in trying to save one of these teeth, or allowing it to erupt sufficiently so that I could remove it, and it has caused two years of painfulness and soreness, when the removal of the second molar would have saved the patient two years of pain. They will pain every two or three months. Thermal changes seem to have their influence upon these teeth. I was able to relieve the gentleman two weeks ago. My judgment then told me at the time that I should have removed the second molar; it was a perfectly sound tooth. I found the third molar to be a very good tooth, and if the second had been removed in its place the man would have had a useful member and would have saved him two years of suffering. There is no rule by which we we can be governed as to what is the best thing to do. It is impossible to save a great many of the teeth that we attempt to save. They prove to be failures; we are very apt to do too much with them, and my opinion is that it requires pretty good judgment to know when and when not to remove

them. If I were going to give or follow a rule at all, I should say remove them. But that is not a rule, and I do not wish to be placed on record as saying that it is a rule, or that I would extract all of these teeth.

DR. P. J. KESTER: I was much interested in the paper. Speaking of the treatment for the overhanging gum which, by the way, is very annoying and sometimes difficult to get rid of by dissecting it away. I have found by wedging the gum by placing a pledget of cotton saturated with sandarac between the tooth and gum that the gum will be absorbed and no further trouble occurs. I suggest that as a possible and effectual treatment for overhanging gum.

DR. L. L. DAVIS: I would like to ask the gentleman that spoke last whether he has ever had it tried in his own mouth.

DR. KESTER: I never have. I have tried it in other people's mouths where the gum has been lanced repeatedly without relief, and I have found by making applications of *cannabis indica*, cocaine or something of that nature to anæsthetize the gum, that the treatment may be made without pain and the patient greatly relieved.

DR. J. W. SLONAKER: There is one point that suggested itself to me, and that is the profession does not go far enough in examining the wisdom tooth in its relation to the vertical portion of the ramus. They will find by running the finger well back of the wisdom tooth when the gum is over the top of it, that there may be a space of one-sixteenth or one-quarter of an inch between the posterior end of the wisdom tooth and the vertical portion of the jaw, and frequently I have had cases where the dentist has been cutting away the gum for six months to a year in trying to force it back, when there was but one-sixteenth of an inch between the posterior part of the wisdom tooth and the vertical portion of the jaw. There was no room for tissue except over the top of the tooth. A great many mistakes are caused by an improper anatomical examination of the parts. I think that is a point well worthy of your consideration.

DR. L. L. DAVIS: Asked Dr. Kester if he had ever had cotton used to crowd back inflamed gum tissue in his own mouth, stating that he had had it tried on himself, and did not take kindly to it, continuing he said:

Dr. Reid has voiced my sentiments in regard to wisdom teeth, for if there is any rule to be laid down I believe it should be ex-

tract rather than fill, of course making due allowance for the exceptions, as in the case of loss of any of the anterior teeth, or in a perfect arch. I have had three of my wisdom teeth extracted, and the first time the other gives me pain or trouble it will come out. Where there is no room in the jaw and the other teeth are well formed, the only thing to do is to extract them. In a crowded arch from the time the tooth first pushes upward there is more or less local irritation in the gum tissue overlapping, and every few months it becomes inflamed and will cause excruciating pain for a week; then as soon as the suppurative stage has passed away and inflammation dies down, there may be a period of rest. The same thing returns, no matter how much lancing or cotton plugging is done. I have found it so, not only in my own case, but in many that I have operated upon. My opinion is that it is best to extract this tooth in nine cases out of twelve.

DR. A. E. BALDWIN: While the paper was being read by the author, he spoke, among other things, of cleansing the teeth properly, and it occurred to me that this is a point that we perhaps make too little of in regard to this tooth as well as others.

While listening to the remarks of the gentlemen that have preceded me, I am forced to think that some of them forget the fact that when they speak of saving the teeth, that this tooth is in such a locality in the mouth that it is almost impossible to cleanse it with any appliances we have, and a tooth that is placed so far back in the mouth as it is and is often so covered with filth and debris that remains about it that must necessarily be shorter lived if placed in other positions. If I understood the essayist correctly, he spoke of extracting the first permanent molar *when badly decayed*, but a little different opinion was expressed by one gentleman. If the essayist meant to extract this tooth in the early history of the case, not after but before it (the wisdom tooth) has erupted, I can fully endorse his position. This, to my mind, is a good plan of procedure, because you will have very little crowding of the tooth, if the first permanent molar is extracted, say before the 12th year and then when the wisdom tooth comes in, it will come in upright and will be far enough forward to do away with the overhanging of the gum. In the majority of cases, as Dr. Reid has stated, where you have trouble with the teeth, and of course I mean in those cases where the other teeth are present, and this is decayed and in close quarters—where they begin to decay it is

much better to extract it than to trifle with it. I encourage my patients to believe that they are better off with two good molars uncrowded on either side than they are with three badly crowded and filthy teeth, and so whenever I get an opportunity I extract it. If I have a patient with a third molar that is badly decayed and is situated in such a position as we are speaking about, I almost invariably have such teeth in my waste basket, and I believe it is much better for my patient. If I were called upon in such a case as has been referred to by Dr. Reid, where it was impinging upon the second molar in such a way that it retarded its eruption, I should extract the second molar and make room for it and not give my patient the suffering and pain that he spoke of.

In regard to cleansing the teeth, probably I am not as theoretical as some in my belief; but I think if we would encourage our patients more than we do to cleanse their teeth thoroughly at night rather than at any other time of the day it would be of advantage to them. I never could understand the reason of cleansing the teeth most thoroughly in the morning before breakfast, and then after eating supper at night leaving them with filth on them until morning. It seems to me as though we should encourage them to clean their teeth at one time of the day more than at any other time, and that should be after the last meal is taken, to cleanse them not only with brush but with either floss silk or some other means. I advise my patients to use rubber bands between the teeth to cleanse them thoroughly, and I think all must realize that if they keep the wisdom tooth clean they must be adepts in the use of these materials in getting at the teeth. I should urgently advise all dentists to insist upon their patients cleansing the teeth thoroughly before they go to bed. If there is any one time of day that they should cleanse their teeth, it is after the last meal.

DR. J. W. SLONAKER: I have found since coming out West that there are fewer first molars extracted than there are in the East—about 75 per cent less, and I also find that there is just proportionately that number of crowded wisdom teeth and badly decayed ones. At least 25 per cent of the first molars are extracted in the East, and I doubt whether there is more than 10 per cent extracted in the West. As before stated, we find badly decayed wisdom teeth and crowded arches, and I suppose in the course of the first three months here I saw a dozen inverted wisdom teeth. I never saw a case where the wisdom tooth was crowded when the

first molars or first bicuspid were extracted in the 12th or 13th year. I have found also a great many first molars in such a condition that I had to extract them at 20 and 25 years of age, and the consequence then is a space and which will never close and bad wisdom teeth and crowded arches. I do not advocate the promiscuous slaughtering of the first molar. It is a question in which I have had a great deal of experience. I have seen thousands of cases in children of ten and twelve years of age where it had been extracted and saw these children when 25 and their mouths were perfect. I perhaps have seen, without exaggeration, 25,000 of such molars extracted. In Philadelphia, Dr. J. D. White caused to be extracted more first molars than any man I ever met. I have seen beautiful mouths in consequence; there was enough space between all the bicuspid and laterals for putting in small pieces of thread; the wisdom teeth were good and solid; I do not mean you should extract first molars in children where there is a large arch and plenty of room, but where the first molar is badly decayed at 10 or 12 years of age with the nerve exposed.

DR. A. W. HARLAN: I had the pleasure of listening to the essay while Dr. Crouse was talking to me about the Dental Protective Association. I listened to the latter gentlemen with my right ear, and turned my left to the essayist, and I didn't get a clear idea of what the essayist had offered with reference to the management of the third molar tooth. I gathered from the discussion that there is a difference of opinion in regard to the retention or extraction of that tooth. The whole question is one that can hardly be settled in a few moments, and so I will speak of the third molar tooth more particularly as we find it. A great many third molar teeth are under normal in size, so that if the first molar tooth is extracted you will have a smaller masticating apparatus to begin with. If the first molar tooth is extracted in anticipation of bringing forward the third molar tooth, and it happens to be one under size, then you have deformed that mouth. If the first molar is extracted on account of extensive caries at the ninth or tenth—not later than the tenth—year it is a perfectly justifiable operation; but to extract it simply because it may be decayed, or the mouth may be crowded, or the teeth may be irregularly arranged, I consider bad practice, whether it is done in the East or West, the North or South.

The true object of persons having teeth is to have them for use,

and I believe in the retention of the whole thirty-two if they are regularly arranged, or likely to be, and almost any well instructed dentist can tell. I think the whole question goes farther back than the present. One of the prime necessities is to have good parents with good, physical frames, and if the children are properly fed and taken care of they will have a good dental apparatus.

With reference to the management of the third molar tooth after it has erupted, or after it has nearly erupted, when there is overhanging gum, I did not hear the essayist's treatment of that; but I wish to say that no gingerly measures should be practiced with reference to giving that tooth an opportunity to make itself shown. If any cutting is done it must be done in the most liberal manner. Descending to personal methods, I will say that I take a long pair of curved scissors and slit the gum back beyond the distal side of the molar, and then I clip off generous quantities of the gum on either side, and then treat the surface with ethylate of sodium to still further destroy the tissues that may be inexpedient to get at. Ethylate of sodium will destroy tissue without injuring the tooth. Nitrate of silver will not do it well. Chromic acid when it does do it, will do it at the expense of the surface of the tooth. Chloride of zinc it is not possible to use well; sulphuric and other acids it were better to leave out of the mouth. So much with reference to that portion of the subject.

In regard to filling such teeth, if they are not malposed, not out of line, if they can be made to develop, I should say fill them and retain them. You do not know how soon you will fall through an elevator shaft or be run over by a bicycle or lose one or more teeth, and these teeth will come in at that period. Then, furthermore, the pulps of the bicuspid and first molars may die, and the patient may get into the hands of an inefficient dentist, or he may be on a sea voyage where he cannot get attention, so he would lose his tooth. If the third molar is in place and one piece of bridge work is put in the mouth you have got it there, there is a posterior attachment to the bridge. From my study of the subject, observation and general practice, I should say that the retention of the third molar is a necessity, and that modern dental surgery is able to retain it.

J. J. WHALEY: I am rather surprised to hear some of the older members of the society advocating so generously extraction of the

teeth under discussion. Those who are practicing the more modern science of dentistry (*viz.* bridgework) as referred to by Dr. Harlan, know the inestimable value of these teeth for anchorage.

How many people could be made happy had they remaining those popularly condemned wisdom teeth. Many practical instances can be referred in my practice to their utility as anchorage for better and more satisfactory masticating substitutes than the plate system gives.

In the manner of treatment of the membrane over-lapping the sapenties, I regret that the essayist did not give us his method of treatment medicinally. Dr. Harlan recommended the removal of a liberal amount of the overlapping tissues, I agree with him, and perhaps the neatest way to do this is first hypodermically inject q. s. of 12 per cent solution of cocaine, then place in your dental engine a sharp aluminum disk and remove freely the surrounding tissues, apply astringent. In every case treatment this has had the desired effect with permanent relief to the patient.

DR. A. E. BALDWIN: I want to express a little surprise at the claim for the preservation of the wisdom tooth. It has been claimed that we should save it on the ground that we may need it some time. I think the last gentleman who preceded Dr. Reid spoke of it being very convenient for the use of bridge work, and had seen in several cases where it was necessary that this tooth is often of advantage for bridge work. Where the first molar had been extracted and possibly the second molar before the eruption of the wisdom tooth, or at any event, the wisdom tooth had been placed far enough forward in the mouth to obviate the necessity of its extraction, as has been advocated we may all grant. I do not think I ever heard any one in this society advocate the wholesale extraction of wisdom teeth. Dr. Harlan rather emphasized the fact that this tooth ought to be preserved in this progressive age. That is all right if we can do so. It may be that my practice is a little peculiar, or that I have a peculiar class of patients; but I am very positive that with all the information I can get I have seen a great many wisdom teeth in my office that neither Dr. Harlan nor any other man could save, I do not care who he is, because if you cut away all the decay you would not have a tooth; in other words, the whole surface of the crown of the tooth had decalcified, and it is absurd to talk of saving teeth of this character. When you have a wisdom or any other tooth you must take into account not only the

surface above the gum but below. As Dr. Reid has just said, the wisdom tooth is peculiarly situated in the jaws, it stands as an inverted cone, as it were; its gingival margin is larger than it is in the place below it, and there is little chance for a permanent support from that tooth on that account. I do not think it would be right for either us older or younger dentists to advise and encourage our patients to save this tooth when the other teeth are in place and it is crowded.

Dr. Harlan stated one fact that we should take into account, and that is the alignment of the teeth. If we find a tooth is decayed and it is not in a position to aid in mastication, it is not as important to save it as it is if it were in proper alignment. I emphatically disagree with the opinion expressed that we should encourage our patients that nearly all of these teeth can be saved and be made useful by any art or skill of ours.

DR. HOLMES: I have listened with interest to the discussion pro and con and the manner in which you have grasped this wisdom tooth. It is plain that no fixed law can be made; it is a matter of personal opinion more than otherwise.

I had hardly intended to carry out the idea of evolution as touched upon by Dr. Wassall, and it was not my object to give any specific methods which are more the result of individual efforts than could be generalized.

POST-GRADUATE DENTAL ASSOCIATION.

The annual meeting of the Post-Graduate Dental Association of the United States was held at the Leland Hotel, Chicago, June 24, Dr. Cushing, president, in the chair.

The order of the day was reports of officers, transaction of routine business, election of officers and interesting discussions in regard to the future work of the society.

Officers elected for the ensuing year were as follows: President, Dr. R. B. Tuller, Chicago; vice presidents, Dr. Levi S. Keagle, Vinton, Iowa; Dr. A. P. Nicholson, Edgerton, Wis., and Dr. M. R. Julian, Lafayette, Ind.; secretary and treasurer, Dr. L. S. Tenney, Chicago.

This organization has just completed the second year of its existence, and seems to have struck a popular chord in the profession, as its rapidly increasing membership would indicate.

As is generally well known, the object of the Society is mainly to establish a systematic course of home study and measures are now on foot to begin this work during the year. Those desiring further information should address the secretary, Dr. L. S. Tenney, 96 State St., Chicago, Ill.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITORS:

LOUIS OTTOFY, D. D. S.

L. L. DAVIS, D. D. S.

C. N. JOHNSON, L. D. S., D. D. S.

THE FRUITS OF PROFESSIONAL ENDEAVOR.

If one thing is emphasized more than another in the recent deaths recorded in the dental ranks, it is the fact that professional endeavor and attainment will, in time, receive in one form or other a fitting measure of acknowledgment. A man may go on for years doing his best, and he may become disheartened at the apparent coldness of his friends in the profession. If he is emphatic in his advocacy of theories he may meet the chilling rebuff of opposition. He may work for a lifetime and feel that after all he has accomplished but little—that the most he has done is to generate discussion and make opponents. But we feel sure of this one fact, that no honest man can live and do his duty in the profession without leaving his imprint on its history. We know of no calling which is so free to honor the humblest effort of its humblest member as dentistry. We say this as a word of encouragement to those who may feel that they are not appreciated.

And yet there is one phase of the matter to which we wish to call special attention. While the profession is free to acknowledge a man's ability, it is too often the case that it waits till the man is dead before it expresses that acknowledgment. If we are a correct judge of the signs of the times, Shakespeare was wrong when he said:

“The evil that men do lives after them,

The good is oft interred with their bones.”

It seems to us that the reverse is true, and we are inclined to the belief that either Shakespeare was mistaken or else he put those words in Antony's mouth for the sake of their effect on the

multitude. Certainly in this age the good that men do is emphasized at their death, and the evil, if not forgotten, is at least draped with the beautiful mantle of charity. It is well that this is so, and we prefer that a man's virtues be sung so loudly as to drown out the echo of his faults.

And yet why not give a full measure of this praise to the individual before his death? Why must we wait till a man has got beyond the point where he himself can appreciate and enjoy commendation before we think to mention all his virtues? It is true that Atkinson, White, Maynard, and others, were respected while they lived, but can the profession truly say that it searched for their virtues in the flesh with the same loving kindness that it now records them in the spirit? It must be a source of the greatest satisfaction to the friends and relatives of these men to see how their names are revered by the profession, and yet to a man himself do we owe the homage to which his worth entitles him.

There are others in the profession who are nearing the pearly gates. There are those who were the associates, the freinds, the comrades of the men who have so recently "gone before." We have it in our power now to smooth the rugged pathway of their declining years. These men deserve not only our respect, not only our thanks, not only our commendation and reverence, but they deserve our love. We should look tenderly upon the old men. They gave us what we have in the way of a profession. They labored with discouragements that we know nothing of. They trod a weary uphill road; let us make the remainder of their journey a pathway of roses. Let us show them while they are yet alive that we appreciate them and love them. Let us sweeten their last days with a perfume of pleasant memories, and help them to greet the sunset of their lives with a peaceful smile.

Let us not reserve all of our tenderness for the casket and the bier.

C. N. J.

THE AMERICAN DENTAL ASSOCIATION.

From the energetic work of Dr. J. N. Crouse, chairman of the Executive Committee of the A. D. A., it looks as though the next meeting would be very successful. Saratoga is a charming place to visit, and many of the hotels have very attractive rates. Board may be had from one dollar per day upward (consult the list of hotels in our memoranda). Four associations will convene at Sar-

atoga, the association of Faculties, Examiners, Protective Association and the A. D. A. Try and be present and read a paper or exhibit something of interest to dentists.

THE DENTISTS' LIBRARY.

We shall be pleased to publish communications from members of the profession regarding the books most essential to the everyday practitioner, and a list of those that ought to be in every dentist's library. There are numerous collections of books under the term "Medical Library" and we see no reason why there should not be issued a set of volumes under the heading "Dental Library." Will you offer suggestions?

What volumes do you consider most essential to a dentist?

DR. E. C. KIRK.

Dr. E. C. Kirk has been appointed to the post of editor of the *Dental Cosmos*, made vacant by the death of Dr. J. W. White. We extend to the new editor a cordial welcome to the ranks and can assure him that the faithful discharge of the duties of the new position will be his reward in more senses than one. The position of editor in these times is one of great and increasing responsibility involving much serious labor and leaving little time to be spent in recreation. For the honor and dignity of the dental profession, just such men are needed to guide and direct our journals. *Salve.*

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

To the Editor of THE DENTAL REVIEW:

DEAR SIR: June comes and with it an atmosphere perfumed by the favors of heaven. It is now upon us, and all the flowers that bloom are in their glory. They toil not, yet they make one's eyes spin with admiration. It is our choice month. We made our first bow in June on this planet, while it was the 30th day, yet it has such charms for us as none others have. We think it has much to do with one's disposition, the month we are born. We wonder if anything that has to do with life fails in its influence upon us? We trow not. By the variety we are kept in our lot and place, else we would fly off into space. But who is content? It is a laugh sand-

witched with a growl. Too hot and too cold ; too wet and too dry. If there is any one thing one needs to shun, it is discontent, and yet it is one of the dangers of the day. In this motley and incongruous mixture of all nations in this mighty American city, there is every conceivable phase of character, and the result is every disposition is made manifest. In politics, the other party is worse ; in theology, dogmatism seeks to dominate the opinions of another ; in medicine, they lay it to the microbe ; and with all the dominating know-alls, things don't settle, things are all dug up like our streets, and things are odorous, and where the ferment that comes of all this disorder will bring up, requires more than worldly wisdom to divine. The age is a fermentable one, and nothing but knowledge will settle it. If there could be a spirit of willingness, to listen to the Voice that is whispering to all inward inquiry, and each accept it for their revelation, how much smoother the world would go on. No opposition, no progress ; no revolution, no evolution ; no microbes, no antiseptics ; and all these furnish subjects for our mental exercises. And Dr. Rehfuss, of Philadelphia, furnished a paper on antiseptics an hour and a half long for the first district society this month. This was appropriate, for our societies are fermenting. As I have hinted, and you will see by this letter, Dr. Rehfuss is a strong deliverer—an ardent one. Some thought him not a little pretentious in his style of oratory. Of course this must be more thought of than the subject matter by those that are not hungry for knowledge. Why not let a fellow that comes from a distant city enjoy his own comfort, do a little for his own gratification. He can't get a full compensation out of the formal vote of thanks, nor from the cussing and discussing from want of misunderstandings. For a June meeting there was a good deal of breeze and scurrying over matters and things. One member had his pockets full of violated codes and started to file charges and expel members right and left. The woods are full of these things:—they all do it. This is another ferment. It must come, and that soon. The bottom and the top of society is in it. Prof. Harlan will see food for thought, when he sees the discussion of this paper on antiseptics in print. I don't think he will see much digest indicated by some of the speakers.

I am inclined to think it is the better to let each one have his say, and not antagonize much, and let them go into print. The one that has knowledge will give his reason for the faith that is in

him, and those that are watching for knowledge will learn to discern the real truth. Is it not about time too, to give the whys and hows? This dogmatic way of saying things, without any explanation, is not very forcible for these days. The essayist said, not use carbolic acid "in acute inflammation." This was met by advocating its free use. I give this as an example. A man who knows, can dogmatize. Yet he must convince intelligent listeners that he "speaks as one of authority." The society had an exhibit of Dr. Farrar's multitudinal surgical method of the uses of antiseptics. We did not count the number of syringes, but there was one for every medicine in the pharmacopœia. This is all very well for an exhibitor, but for every day practice it falls short in its common sense advocacy. Dr. Farrar most likely gets delight in this system, for he keeps a helper for each squirt gun and the same with his numerous engines, all ready to be called out at the first alarm. This reminds me of a story. The circumstance occurred in the office of the Hazzardville, Conn. dentist, Dr. Law. I give all the details, which gives veracity. A buxom miss called on a certain day, soon after the introduction of engine power. She says, "Doctor, do you use the engine for filling teeth?" "Oh, yes," says the doctor. "Well, will you fire up for one." So there is an advantage in keeping several fired up. Dr. Farrar is a busy worker, none can be more so, as it is evidenced by the unlimited detail in his practice, and look at the task of industry packed between the two covers of his unparalleled book; and to think of two more yet to come. How vacant it makes by comparison some other careers. Think of those that have come on to the great elevation prepared and brought along with them. They went up like a rocket; they have come down like a stick, and out of sight. It is more noble to leave some footprints on the sands of time. Work! work! is the need of the hour. Here is a sample. We overheard this remark coming from a meeting, where new remedies had been highly commended. "I have got two remedies that I can do all I want to with; none of this d—— nonsense for me." I had seen a case of extensive necrosis that very day that had started on its destructive course because *he did not* possess the third remedy—*i. e.*, knowledge. I have sometimes thought that we would do more to educate those that are seeking knowledge, if we would print the essay as given by the author, and then choose some one to reply to it, some one that was supposed to be in the thought of the subject. There is so

much contradictory statement in our general discussions, while I see much that shows maturity of thought in a larger sense than formerly, yet it is not finished. It is for this reason that we do not feel disposed to try and place the discussions that followed this paper on antiseptics.

Dr. Sabater, of New York, read a very intelligent and interesting paper on necrosis. It was short and very concise. For want of time it was not discussed. Things are just settling in the First District Society under the new administration. Drs. Ottolengui and Rhein are like a pair of colts with a "Norman" at the wheel.

Everything this month has just razzle-dazzled. The clinic overleaped everything on record for June; 170 in attendance, and objects of interest from necrosis to a new sandpaper disc holder, the latter by Dr. Rowe, of Albany. It has a turn and a half of corkscrew blade that can be used to take up the disc while in motion. If we are a judge it is ahead of anything out. Dr. Hoffman, a right smart Vermonter, White River Junction, he was at home with mechanical mallet, rope gold and big cavities. He made us think of Crouse when he was young. He was not content to attack anything of a minor caliber in the way of filling. Now, he cannot do any small things, can't spare such men; so we must do all we can to hold their arms up. Dr. Dibble, "Amalgam Dibble," had his pockets full of pneumatic mallets, like Pollycrest Remedies, one for every case; one for a pen foot, your thumb, long reach or short. Where we will stop will only be measured by our pocket book, yet, as long as there are so many curious ones there will be market for all. Dr. Canady, of Albany, is an earnest advocate for combination of tin and gold, and believes in the hardening quality as claimed by Prof. Miller. He is sound. We have seen the evidence within the last month, in a tooth filled by ourselves in our daughter's mouth; seeing is believing. How about that specimen sent by Prof. Miller to the editor of the *Western Journal*? How long does it take to say yes, when one has the evidence? or must they put their finger in before they can believe? I suppose they must be made so. A number of Howland crowns, new moulds, were on exhibition. Prof. Wiese, of the New York Dental College, lectured over a case of necrosis to a hungry bevy of young uns. The professor is smart, he is a rattler. This case was one of exceeding interest and novelty. The left superior twelve year molar had exfoliated with the entire process and floor of the antrum attached, in situ, which could

be slipped off like a finger glove, leaving an entrance direct into the antrum and the surroundings in an uninflamed condition. Various views were taken of the origin of this case. While the professor did not fully agree that the exciting cause was syphilis, yet there were reasons to think it was. Doctors disagreed. In reference to the possibilities of the opening closing, various expressions of doubt were given. It is proposed to keep the case in view and determine what will be the result to the os. Dr. Merriam, of Salem, Mass., gave an essay of a decided elevating tendency, "Relation to Our Resources." The doctor had on his sweetest smile, having been complimented by a party dinner previous to the meeting; not an extravagant one, but a good supply sufficient for comfort for the inner man.

The subject was showered with compliments by all that took part in the feast. It really seemed that each vied with the other to give meed of praise, while their words were *well* weighed and some of them given with care, they were full of spirit. It was said that the doctor prepared it in three minutes, and one speaker remarked that he had wondered what the essayist might have produced if he had spent an hour upon it. Dr. Davenport likened Dr. Merriam's work among them to the missionaries, that it had proved where such had gone, the heathen did get cleaner, so it worked with them. The doctor's paper was well written, and spoke hopefully of things that were sure to come, although the great and notable day was not yet here. The central thought was that our calling was in need of all the elevating tendencies that could be gotten by educational broadenings; all these things would bring us to be more distinctively a profession. Among the many allusions the Journals came in for attention. In this connection Dr. Bogue plied a knotty question; as usual just what he was designing I am not clear. He says, when the Executive Committee apply for talent to be displayed before them they are met by refusal, for the reason that their mouthpiece does not have the circulation. They want their articles that they (?) labor to prepare read by the largest number. Dr. C. D. Cook was the last speaker. He did not seem so full of spirit, he hesitated a good deal about saying anything but did finally rally, and said that while some forty or fifty years ago we termed ourselves as a "Profession" now in the latter days we are talking of specialists; of course he only meant those who wore the mystic M. Ds.: he said that the English have *always* meant that to be a

dentist meant "education and gentlemanly qualities." He spoke as though he had an unusual inspiration. Of course we cannot do it full justice. It is to be hoped that this speech will do missionary work, for Dr. Cook was decidedly impressed that it was much needed. Dr. Cook has traveled very extensively, particularly in London. He is the father-in-law of Mr. Charles Tomes, who is a good example of an educated and cultivated gentleman, as all can testify that have read his writings and have met him. These things are worthy of every one. "A gentleman never forgets himself." The curtain for both societies falls until fall. What the summer weeks of vacation will put in store for coming days will be revealed.

Quite a group are booked for foreign travel, the Baths, and Heidelberg, and the A. D. A. is booked for Saratoga, unexcelled by any place in this country, suited for *all* taste. There is an opportunity for making Prof. Harlan's administration historical. There is need of reformation in this time-honored body, and there ought to be enough of the right spirit to do it. We have no lack of talent, and there must be ways and means devised to bring it out. We ought to honor the progress that has come to us in the last quarter of the century, as the results of men that have shown devotion worthy of emulation by younger men. These for zeal, and the maturer men for judgment, both of which will be much needed for the work immediately before us.

Our needs call for talent devoted more to special work, following up continuously subjects even if need be, from year to year, not only in science but practical work for all. While we have men that are readers for general information, there is a woeful lack of readers of our literature. We spent a half hour in the library of the Academy of Medicine, where the Society meetings are held. We inquired for the dental literature. It did not take long to go over it. There was a very incomplete file of four journals, *Register*, *Review*, *Cosmos* and *Advertiser*. I do not think this commendable to the repute of these societies. They owe it to themselves that they are fully and systematically represented in this library, now, that are housed there; or what would be as well, supply them in their own rooms and cases. This would be no little encouragement to the journals. The Brooklyn Society have for several years subscribed for a number of the journals and are to be found on file in the Kings County Medical Library, which gives a continuation of a file, making a nice nucleus for a library of their

own. We feel a little satisfaction in this, for it is carrying out our original purpose in the formation of this Society. We contributed the beginnings of their library; ultimately it may lead to something that will be valued by the coming dentist. What is the matter with the *Mirror*? many subscribers are asking. It don't reflect any for the last two months. It is said the quicksilver is off behind it. The silver question is an absorbing question of the times. How about the editors when the silver gives out? There is a new *Kirque* in the editorial line now, and things may take a new direction. Already we hear that the proceedings of certain societies have to be fixed before they can appear, and the authors of these are kicking. We hear remarks like this: "Do dentists think we are running this business on philanthropic principles?" This indicates that the waters are troubled, and the end is not yet. We hear that Dr. Crane, of Paris, is to visit in August, after an absence of twenty years. We recall his fine face and gentlemanly address. He has many friends that will give him a cordial greeting. It was at the meeting of the A. D. A., held in Saratoga that we first met him, in 1870, and we trust we will have the pleasure of renewing our acquaintance there this season. Doubtless Chicago will be highly honored by the presence of many practitioners of repute from foreign countries. The months are flying fast, but some are gone that anticipated this noted meeting, and we will miss them and their contributions. Dr. James W. White, so suddenly removed, had an impression that his time was drawing to a close; he wrote in connection with the Banquet of the Patriarchs that he felt that he would not be with us long. Dr. S. S. White told Dr. Atkinson when bidding him adieu on shipboard, prior to his departure to Europe, that he did not expect to return alive. Be ye also ready, for in such a time as ye think not the call may come, and what more fitting than to be found watching and active? Every one of us ought to so live that we will be found willing when the call comes, but on the other hand it should be our purpose to so conduct our daily life, that our career may not be cut off prematurely. The late Dr. Bronson said to us the last time we met him only a short time previous to his removal, that "he only ate to live." Dr. S. G. Perry said at the last meeting of the O. S., "life was made noble by living to work for high purposes, and it was degraded without such inspiration." Truly we are for noble purposes, and it is but brutish that any can live with no high aim. What is man, that he should

be created for an immortal destiny? These thoughts are incidental, yet they are our daily aspirations, and they sweeten the ascetics of life. We are brothers, and need the moral support of each other in our ardent calling.

Ex.

NEW YORK STATE DENTAL SOCIETY.

DEAR SIR: Thinking that your readers would enjoy a trip from our city to Albany and back in this beautiful vernal month, I will tell what we who have made the trip, saw, heard and thought. It is one hundred and forty-four miles from city to city. At 9:15 A. M., we moved almost noiselessly out of the Grand Central Depot in a Wagner vestibule train. Just as we commenced to move a sotto voce announced, "No stop between here and Albany." "Well," we thought, "here's time for reflection and a little repose," so we dropped back and prepared for it. We are fond of travel and always feel disposed to accept all the contingencies surrounding us. Our seat companion proved a very wide awake North Carolinian going north to solicit capital for home investment. He proved a good talker, so the time did not hang heavily throughout the entire route. We did among many topics mentioned, bring in professional interests, considering them worthy of general notice to indicate at least "what the dentists are saying." We know of some very fastidious members of our craft who disdain to mention their calling while mingling with the world. Well, we think it worthy of reputable mention. We did not say "biled rubber" or "store teeth" during the entire conversation, but we did try to magnify the strides of progress that we are truly making and we flatter ourselves that one man in the South will think none the less of our exaltation of our calling. We were led to do this for we found our companion one who was imbued with the thought that whatever our vocation was, it was noble to hold it at its proper estimate, and as he set the example, we followed suit, and took a trick or two, blending with here and there faithful attention to the marked picturesque valley and mountain scenery of the unparalleled Hudson. The weather, too, was perfect, and the inspiration of the circumstances and environments all contributed to a really enjoyable and invigorating journey without even a feeling of ennui in any sense. Unexpectedly a voice vibrated through the car "Albany," and gathering up our "grip," not "la grippe," (for it had not considered us suitable material upon which to get a grip) we are too

busy, we make no stops—whatever our hands find to do, we do it. “Industry and Hope” is our daily talisman. Our train pulls into the depot quietly—as it went out—and we bid to our companion “au revoir,” and in five minutes we find ourselves at the desk of the hospitable hostelry, the Delavan, for many years a well-kept house, full of comfort for man and beast (for we have seen both within its walls). From a comfortable room with suitable toilet alteration, which is a luxury for all well-ordered humans, our stomach leads us toward the dining-room for we had a quick journey though a long one. As we passed down the spacious dining-hall we scanned the tables and felt at once at home for familiar faces greeted us on every hand—New York City, Brooklyn, New Jersey, Boston and Philadelphia well and notably represented. We sat down in an atmosphere of unusual sociability nay, usual, for it is among ourselves notably so.

The session of the morning had ended, the first of the administration of Dr. Walker so long anticipated. We had also anticipated being present, but a bleb of “retrograde metamorphosis” had switched us off, but we have learned to be grateful for small things and large ones in proportion. Finding ourselves really among the grand sachems of dental progress, we began, while our waiter was filling our order for nourishment from the bountiful menu, casting about from table to table to discover who was present. First of all, our eyes fell upon not the least of all in avoirdupois, the worthy president, Dr. Walker, whose executive ability makes everything quiver with “sympathetic vibration,” for what he finds to be done, to bring out *success, he does it*. A second term has fallen to him, and he modestly said, “I think some younger man could do better.”

He is president of the New York State Association for another year, and we wish to show before we finish this letter that he has earned the honor. The business committee made their arrangements admirably; everything seemed to fit in so nicely that no delays occurred. From the beginning throughout the entire sessions not a jar was manifest. The hand of a master workman was evidenced in all the proceedings. Harmony prevailed in all. Each subject was carefully prepared for and interesting discussions followed. What we wish to emphasize is the decided evidence of a larger devotion to the studying to bring out the decisive points in controversy, and also to add new discoveries. The president’s

address was delivered before we reached the meeting, which we would have been glad to have incorporated in abstract, this being a feature of decided advantage when made use of.

SYLLABUS OF DR. SHEPARD'S PAPER.

1. Refers to former address and the increased interest in the subject.

2. Examinations of graduates constitutional, and only such laws as are retroactive or make unfair distinctions unconstitutional.

3. Regards increase of colleges as injurious, and needing laws to restrain.

4. Criticism of composition of State boards not just. As a rule the examiners give more with less return than any other class of extra office workers.

5. Criticises action of the National Association of Dental Examiners and the American Dental Association in regard to the old New Hampshire law.

6. Quotes the New Hampshire decision that the law was unconstitutional, and approves that decision.

7. Story of the examination of a graduate, and criticises his college.

8. Reviews the address of President Foster in regard to uniformity in State laws, and quotes resolution of American Dental Association on the subject.

9. Disapproves of many of the features recommended for State laws by the National Association of Dental Examiners.

(a) "Five years previous practice should qualify." Thinks this retroactive and unconstitutional.

(b) "Non-graduates must have had five calendar years of instruction to be eligible to examination." Believes graduates and non-graduates should be treated alike. The question being knowledge and skill wherever and whenever obtained.

(c) Believes examinations of graduates should be compulsory and not optional.

(d) Believes in oral examinations.

(e) "Failure to fulfill the requirement in any one branch should disqualify." Thinks this not proper for the State inquiry.

(f) "State boards should have power to revoke for cause a certificate of qualification." Regards this as dangerous.

(g) Many of the features recommended are matters of detail which should not be embodied in a law.

10. Quotes President Foster's deprecation of laws derogatory and injuries to the schools.

Replies by quoting from the National Association of Dental Faculties and last report on Education to American Dental Association.

11. Legal enactments will make colleges higher educational institutions and thin out the poor ones.

Dr. Shepard's paper was the only one given in abstract. We learn that there are those who object when asked to do this, which we insert: (See Syllabus of Dr. Shepard's paper.) He makes a decidedly sensible reservation relative to the unconstitutionality of retroactive legislation. How many will regard his views of legislating to restrain the increase of dental colleges as sound, will after a little consideration appear. Can we legislate against the increase of educational channels? We think he justly notices the censure of State boards. Doubtless they may err but only through weakness, we do not think purposely. They, like our whole body, are not fully decided what is the acme of wisdom for all our affairs are in the development stage, and many of our steps must necessarily be in the dark, yet our good intent must always be apparent. How much it may be captiousness on the part of the A. D. A. and the National examiners may not be perfectly discernible. In his review of the New Hampshire law proving unconstitutional, it is only a wise man that says "yes" when it is the only thing he can do.

What is said of the careless examinations of students as in the case cited it can only be regarded a serious blunder, and unjust to the student; yes, more, is it honest? Favoring the advocacy of President Foster last year in energizing ourselves in behalf of unity of action in legislation, is a duty that our profession must not allow to escape all the diligence that can be brought to bear. It is so "common sense" or "horse sense" only stubbornness or imbecility can be said to be at all a combating element against a uniform law. I note these points for they were well gone over in the discussions by such men as Drs. Pierce, Darby, Barrett, Guilford, Jarvie, Abbott and others. All these discussions tended to a disposition for unity of action, and so amicable were these conferences it intimates a decided advance in liberality. Dr. E. C. Kirk, of Philadelphia, had an able and nicely prepared paper on the new

medicine "Aristol." He gave evidence of having carefully and studiously investigated the characteristics of the remedy and its distinctions of difference as compared with others allied to it, and to this added clinical experience, which weighed decidedly in its favor as a remedy of value. He cited the uses he had put it to, too, and the kind of conditions to which he had applied it. Prof. Pierce sustained Dr. Kirk's views based upon his use and observation. We add if further practice bears out the testimony given, it is certainly an improvement over iodoform, and to some extent, iodine, both in favor of the odor of the former and the color of the latter. Prof. Pierce's paper, title, Secondary Dentine, its Physiological and Pathological Significance, was listened to with unusual interest. A point which he introduced called out much attention. It was that he had found a condition of inflamed pulp that caused an enlargement of the canal at the point of disturbance. So much is being said now about the presence of pulp stones, the subject presented by Prof. Pierce's paper added a decided flavor to the discussions participated in by Darby, Barrett, Ottolengui, Guilford, Palmer, of Syracuse, and others. We are going to have a big run on pulp stones. The union meeting at Boston brought out a large deal in them. There is no doubt of their presence even in large numbers but they are *just now* so much a source of trouble more than in former years. All microscopical investigators in the anatomy of the teeth have revealed the fact that there are in a large percentage of teeth abnormal formations. Ultimately these facts will bring a lesson of importance which can be, and will be, made practical in spite of the murmurings going on among many taking shape in this wise, "what is the good of so much scientific study in connection with dentistry?" That an intelligent practice can only be established on a sound scientific basis goes without saying. For the want of this is the reason, that there is so much distorted literature going around as a guide to practice. It does not follow that when John Smith puts oil of cloves into a tooth for any purpose, even though he may not have a scintilla of knowledge of the whys and wherefores of its action, the therapeutic action is directly acting under a law that guides its entire purpose.

The more intelligent a *dentist* becomes, the more will he prove himself master of his practice. This only is only true in all callings, and a hint is timely here particularly to the young and ambitious practitioner, for if he aims for real scientific knowledge, and

gets it, the day will come when he will be superior to those around him who stick their thumbs in their armpits, and declare that they "can fill a tooth as well as the next man." What has given our departed brother Dr. Atkinson such a repute among his fellows but the fact established that he had gained a knowledge above the ordinary. The evidence of so much study and devotion as manifested at Albany carried us continuously in the atmosphere of enthusiasm. We will advance this thought that has impressed us by such papers as Prof. Pierce's, Dr. Abbott's particularly. They tend in a large sense to assure foundation for a scientific practice. We could detail many others who are becoming valuable contributors to the many collateral branches necessary for the substantial support of our vocation. In this is being carried out into a fuller development the larger growth of the work committed to our hands. The report of Dr. Ottolengui on dental practice is worthy of more than a passing notice. It thoroughly and yet concisely reviews the practice of the past year. It proves a decidedly studious attention and its deductions are interesting, concerning the question of implantation. The conclusions were that an artificial socket must be as far as possible disassociated from all disordered conditions, and that the use of mature and well-organized would insure a more certain success.

The percentage of permanency must be dependent upon such observations. The discussion showed a disposition to accord the conclusions of the report.


Dr. Abbott's paper, subject, "Congenital Defects of the Enamel," may be termed, and we say it with pleasure, the brilliant success of Prof. Abbott's entire series of papers. It was admirably prepared and artistically illustrated and carried the conviction of a thorough acquaintance with the study of the subject. Such earnest exhibitions of faithful work are an example that calls for repetition.

The central points made in proof of congenital defects in enamel were that "no disorder that does not involve the mucous membrane can effect the formative process of the enamel," and vice versa, markedly so stomatitis.

The drawings exhibited the many manifestations of this class of defects which is so often seen in enamel. What are denominated measly teeth, and in fact all those that exhibit the supposed disturbances from exanthematous disorders. This paper received

a very flattering attention in discussion. We are not certain that everything was conceded that was advanced in the paper. An amusing episode was brought about, a kind of Dutch-Irish bull. The question was raised whether it might not be admitted that, as there are many malconditions occurring in the system at the formative period of enamel, these might become a retarding influence in enamel growth. "Well," Prof. Abbott replied, we think not fully realizing just how he was answering, "there are, without doubt, many malconditions occurring at this period of development, but I doubt it." This little by little got through the noddle of most of the listeners, and a perfect guffaw went up in prolonged and repeated strains, and this brought the author of the fun to the ridiculousness of the statement, and he joined in with the rest. Such an occurrence is better appreciated when witnessed.

There was no lagging for want of attention to any of the subjects submitted. The whole meeting was characterized by alacrity. The infection was infused by the whole management, making it especially worthy of notice.

Dr. Line, of Rochester, read a paper entitled "Quantitive and Qualitative Rise and Fall of Teeth in their Relation to Work." This embraced the points of value as manifested in the stimulating effects resistance occasions, particularly in the larger use in masticating than has come to be the fashion and shall we say, not to apply to the more active and forcible use of the teeth by a more faithful comminution of foods and those of a larger and more resisting character. These thoughts are worthy of a more intelligent attention and should be forcibly impressed upon the  of the young, and not only this, but the resistance of occluding teeth calls for a more earnest demand in the conservation of all teeth, in contradistinction to the so often almost reckless, or seeming indifference of both the patient and practitioner. The paper was a worthy exhibit of a worthy subject, and was not produced by a random thought of a few moments, proving in a most conclusive manner that we are more and more evidencing a devotedness to the daily duties. The chasm is fast lessening between us and the more liberally educated professions.

We have never seen so many decided manifestations of pushing forward and a willingness to attend to the interest due to these evidences; and this was uniform even until the end of the entire session. Suitable attention was given to the memory of our late

devoted friend and coworker, Dr. Atkinson. On every hand we heard words of praise and appreciation of his work among us. The attendance was unusually large, singularly, there were efforts by prize essays, but none considered worthy of the prize. Thirty-eight applied for the M. D. S.—only three won. Judging by the earnest and convincing remarks of Dr. Barrett, the days of granting a degree by the State society, are numbered.

It is thought an amazing effrontery by many that it has been persisted in so long. Well, history is marred by many such defects, but as we near the higher truths we will come more into unity of thought and action.

Thursday, 2:40 P. M., luxuriously domiciled in the Wagner Vestibule train for return to New York, the journey was a very sociable one and decidedly profitable to all who are aiming higher than the ordinary.

P. S. One thing worthy of note—just at the close of the meeting Dr. Barrett suggested that, as this meeting had been one of unusual interest, it would seem very desirable that something should be done to bring the results immediately before the profession.

President Walker immediately replied, "It is all fixed by previous arrangement, and will appear at once." Hearty applause followed.

The remarkable example of energy set by THE REVIEW is bearing fruit.

G. A. MILLS.

REVIEWS AND ABSTRACTS.

COCAINE PHENATE. A TOPICAL ANTICATARRHAL, ETC., OF PRE-EMINENT AND WIDE-REACHING EFFICACY. THEORY OF BOTH COCAINE AND PHENOL ANÆSTHESIA, AS BEING DEPENDENT ON TEMPORARY ISCHEMIA. Written for "Merck's Bulletin" by Felix Baron von Oefele, M. D.

Having therapeutically studied COCAINE PHENATE (*Carbolate*) MERCK—[See "MERCK'S INDEX," p. 38.]—for more than a year past, I now deem myself prepared to publish a summary of the results of this investigation.

(167) *Compare*: "The Prevention of the Toxic Effect of Cocaine,"—MERCK'S BULLETIN, 1890; p. 86.—ED. "M. B."

Owing to the similarity between some of the physiologic effects of COCAINE and of PHENOL (Carbolic Acid), I conceived the idea, more than a year ago, of combining these two substances. There were two additional reasons, however, for my desiring to make an investigation of this particular COCAINE-salt—the PHENATE, as prepared by MERCK, [*instead of using a mere extemporized mixture of, say Cocainic Hydrochlorate with Phenol* ⁽¹⁶⁷⁾]; to wit:—

In the first place, with Cocaine Hydrochlorate, a feeling of constriction in the throat, indicative of its physiologic action, quickly supervened—giving evidence of its *rapid general absorption* and of the consequent *danger of intoxication*; in the second place, the *Hydrochloric Acid* in Cocaine Hydrochlorate acts *no useful part* at all.

On the other hand, PHENOL—as above referred to—has, apart from its antiseptic action, *the same kind of local effect as Cocaine*.

Let us consider this effect. *If a concentrated solution of Cocaine be applied to the conjunctiva, or the nasal or pharyngeal mucous membranes, these parts turn pale in one or two minutes—that is to say, they become partly bloodless. Local anæsthesia develops about five minutes later—that is, after the nutrition of the peripheral nerve-terminations has been impaired for some time. On the cutis, this effect is less distinctly noticeable.*

That it is the **Distribution of the Blood** which is *primarily* affected, can readily be demonstrated by a simple experiment which I made repeatedly. *Women* (with or without Migraine), *whose menstruation was regular, invariably bled more profusely and prolongedly, upon their foreheads being painted with Cocaine at any time during the menstrual period.* A similar occurrence, less prompt, however, has been repeatedly observed with Hemorrhoids and Varices. The application of Cocaine to the mucous membranes of the respiratory tract, increases the congestion of the varicose tissues and the pain in these parts. In a case of pregnancy, the painful varices of the left leg were painted with COCAINE PHENATE, and a rubber bandage was applied. While the suffering became tolerable on the left side in consequence of this treatment, small varices and corresponding pains developed on the right side.

Upon Cocaine being applied to the gastric mucous membrane in another case, blood appeared in the sputum; upon applying it in the urethra, in still another, nosebleed survened. An employee of E. MERCK'S CHEMICAL WORKS at Darmstadt is known to get an exanthem on his face whenever he has been occupied for some

time in weighing out Cocaine. I myself often got urticaria on various remote parts of the body, from rubbing-up COCAINE PHENATE with my hands.

All these are symptoms which have been observed equally from Cocaine Alkaloid, Cocaine Hydrochlorate, and COCAINE PHENATE, and which, though by no means of frequent occurrence on the whole, still always took place under such circumstances that they had to be referred directly to the action of the COCAINE.

—If we now turn to PHENOL, we observe, as “congestions in opposite places,” *pneumonias* after poisoning from its absorption in the *stomach*. Upon applying a solution of Phenol even as weak as 4 or 5 per cent to mucous membranes, *local anæmia and anæsthesia* both survene. In chronic inveterate ulcers, the patients, of their own accord, always resort again to Phenol dressings, because these at least dispel the pain. Every one who has washed his hands repeatedly in Carbolic-acid water on any morning, is acquainted with the numbness of the fingers resulting for the rest of the day. At the same time, an increased psychic excitability is noticeable,—similar to that produced by repeated small doses of Cocaine.

In view of this physiological similarity between COCAINE and PHENOL, these substances, when combined, must strengthen each other's action. Such considerations, together with the antiseptic properties of Phenol, probably induced VIAU⁽¹⁶⁸⁾, as early as 1887, to employ COCAINE PHENATE as a LOCAL ANÆSTHETIC IN DENTAL OPERATIONS⁽¹⁶⁹⁾.

I took up this substance in the fall of 1889 (*independently of VIAU, of whose experience I knew nothing at the time*)—employing it since then, whenever permissible, in all ailments characterized by *local congestion* and accessible for topical treatment.

One physical property of COCAINE PHENATE most favorable to its therapeutic action—although causing quite some difficulty in its application—is its practical *insolubility in water*.

In consequence hereof, the medicament *cannot be washed away very readily from the site of application* by the lymph-current; in consequence, its local action is *more intensive and prolonged*. While the local effect of Cocaine Hydrochlorate in concentrated *large doses*

(168) *Les Nouveaux Remedes*, 1887; p. 192.

(169) *For a more detailed report on the use of COCAINE PHENATE in Dentistry see MERCK'S BULLETIN*, 1890; p. 10.

does not exceed 7 *hours'* duration, that of COCAINE PHENATE MERCK, in doses of 1 centigramme ($\frac{1}{8}$ grain) and less, *persists for more than 36 hours*—as was proved most beautifully by my numerous cases of Gastric Catarrh. Furthermore, even *very small doses of COCAINE PHENATE MERCK have effect*, because, in consequence of its insolubility, the preparation is not carried away readily. On the other hand, *excessively large doses* of it—1 gramme ($15\frac{1}{2}$ grains), for instance—are not prone to produce toxic symptoms—I, at least, never observe such strong deglutitional spasms and such psychic excitation from COCAINE PHENATE MERCK, as I did from what would be called large doses—0.2–0.3 gramme ($3\text{--}4\frac{1}{2}$ grains)—of Cocaine Hydrochlorate. This fact is of special value in the topical application of Cocaine by the brush, etc., in which the dosage cannot be regulated with exactness—particularly when the manipulation has to be intrusted to laymen.

On the skin, COCAINE PHENATE SOLUTIONS are generally *preferable to the ointment form*, because the latter is efficacious only when made with pure LANOLIN; the addition of other fats or of Glycerin impedes the action of the COCAINE PHENATE until they have been taken up by the epidermis. When the skin is injured—as for instance in *Ulcus cruris*—painting with 1-10 per cent alcoholic solutions of COCAINE PHENATE MERCK, affords relief; the cures affected being ascribable, however, rather to the simultaneous application of the elastic bandage. For the last half year, I have made it a point to paint these ulcers, *after* the COCAINE PHENATE application, with a 10 per cent solution of BLUE PYOKTANIN in Dilute Alcohol, then to let the spot dry, and finally apply a rubber bandage previously steeped in warm water. This procedure, repeated daily, almost always effected a cure in about a fortnight.

Where the skin has been destroyed by a BURN, the effect of COCAINE PHENATE is more distinctly noticeable. Painted daily, these lesions heal *rapidly* and with but moderate pain; leaving rather smooth scars, devoid of disagreeable cicatricial streaks.

RHEUMATIC PAINS in any of the superficial muscles, as well as NEURALGIC PAINS, were dispelled by painting the skin *directly over the painful parts* with COCAINE PHENATE solution. A *weaker effect* was had by painting the skin overlying the *trunk of the nerve* going to the painful spot.

In CARDIALGIA and PERITONITIS likewise, painting with COCAINE PHENATE solution brought relief.

IN NEURALGIC HEADACHES there is particularly good action from COCAINE PHENATE ; while in SCIATICA it is of little effect.

In dispensary patients we can observe the fact that the action of COCAINE PHENATE is *much weaker in the dependent parts* than in the upper parts of the body—because *its action is probably based on a paralysis of the vascular dilators*, which cannot cause any degree of comparative ischemia in the dependent parts on account of the opposing weight of the blood.

COCAINE PHENATE manifests *no* permanent influence on the annoying sensations of various extensive cutaneous affections, as, for instance, Psoriasis.

On the other hand, COCAINE PHENATE *is of inestimable value in all acute and chronic catarrhal affections, except those of the Genito-Urinary apparatus.* In the latter, the most concentrated solutions—even pure COCAINE PHENATE—are capable of producing but *very transient* palliation ; and a *continued attempt* at Cocaine treatment *in this class of affections* could, therefore, but result in turning acute cases into chronic ones, or in producing chronic Cocainism in cases already chronic.

In no other class of affections, however, did I ever see Cocainism induced by the use of COCAINE PHENATE.

In the treatment of *all varieties of Catarrhs, outside of the Urogenital class*, I employed COCAINE PHENATE MERCK with *most favorable effect*—whether by light or by heavy dosage. The forms of exhibition were:—COCAINE PHENATE *pure*, or 5-10% *Solutions* in Alcohol or Spirits of Ether, or 1% solutions in 30% Alcohol,—for PAINT or for INSTILLATION. For INSUFFLATION, 5-10% *Triturations* of COCAINE PHENATE MERCK with ANTIFEBRIN (*no other excipient to be added!*)

In *Nasal and Tubal Catarrhs*, BORIC ACID was advantageously substituted for the Antifebrin as an excipient and adjuvant in the above triturations.

IN CONJUNCTIVAL CATARRH, all of the forms above mentioned (*including the pure substance*) were given trial *by instillation.*—[See details in previous publication in this journal, as noted above.—ED. "M.'s B."]—For a moment, a strong burning sensation survenes, which necessitates closing the eyes. However, a second and a third application, at intervals of 5 minutes, are no longer painful, and are capable of breaking up the affection in acute cases. If this

result be not attained by the initial applications, they must be repeated, say, at intervals of 12-48 hours.

NASAL CATARRHS were broken up *by snuffing* the COCAINE-PHENATE-and-ANTIFEBRIN or COCAINE-PHENATE-and BORIC-ACID powders, above described.—[See, also, previous communication.—ED.]—In cases where the nasal passages are completely occluded, and in little children, a few drops of a COCAINE-PHENATE solution are *instilled into the nose*, with the head low down; or the part is first cleansed by means of a camel's-hair pencil moistened with the solution.

In babes, in particular, very threatening Nasal Catarrhs may develop; the patient drinks neither from the breast nor from the bottle, simply because it is impossible on account of the stopped-up nose; while crying continually from thirst and hunger. The parents often regard the very sick child as beyond rescue, but nevertheless urge the doctor to at least relieve the severe pains. The physician who will, in such a case, proceed in the manner above described and thereby arrest the catarrh, may be sure of gaining the parent's confidence.

In adults, a certain Difficulty of Hearing, often supervening in consequence of *Chronic Tubal Catarrhs*, can be treated most successfully by *insufflating* a quillful of the COCAINE-PHENATE-and-ANTIFEBRIN or COCAINE-PHENATE-and-BORAC-ACID powder; or, sometimes, even by using these powders as an *errhine*.

(For the insufflation, a ZWAARDEMAKER'S Tube (¹⁷⁰) may best be used; or, in its default, a piece of quill, cut away slanting at the point.)

In CATARRHAL PHARYNGITIS, painting with a solution of COCAINE PHENATE MERCK is eligible for breaking up the attack; whereas, in LARYNGITIS, the same purpose is often accomplished more easily by *insufflating* the COCAINE-PHENATE-ANTIFEBRIN combination.

In CATARRHAL AFFECTIONS OF THE TRACHEA and its branches, the *inhalation* method is to be recommended—for which purpose I usually add 10 per cent MENTHOL to the COCAINE-PHENATE solution as an adjuvant.

IRRITATING COUGHS accompanying pulmonary affections, I treated in the same manner with the uniform result of effecting a cure in simple catarrhal affections, and of affording relief in cases of a severer nature.

For Inhalation, the *Stronger solutions of COCAINE PHENATE must not be used* on account of the danger of spasm in the throat and consequent venous congestion of the abdomen.

I *did not yet try* the preparation in PERTUSSIS.

TONSILITIS is deprived of its dangerous symptoms just as promptly by *painting* with a solution of COCAINE PHENATE MERCK, as by a large dose of ANTIFEBRIN.

But it is principally in various Gastric Affections, that COCAINE PHENATE is a *most excellent remedy,—far superior* to Cocaine Hydrochlorate. In this class of diseases, the COCAINE-PHENATE-ANTIFEBRIN combination, or COCAINE PHENATE triturated with Milk-sugar, is most serviceable,—best administered in *Gelatine Capsules*, or enveloped in "*Usego*" ⁽¹⁷¹⁾, (*in order to prevent its contact with the mucous membrane of the mouth and the consequent impairment of its action on the part affected*), in doses representing 5 milligrammes [$\frac{1}{12}$ grain] of COCAINE PHENATE MERCK. It is most efficacious when administered on an empty stomach—about an hour before breakfast.

ACUTE GASTRIC CATARRHS were broken up by administering daily, for two consecutive days, 1-2 gelatine capsules, each containing 5 milligrammes [$\frac{1}{12}$ grain] of COCAINE PHENATE MERCK.

IN CHRONIC GASTRIC CATARRHS, VOMITING OF PREGNANCY, MORNING VOMIT, and CARDIALGIA, I administered the above dose with almost invariably the *promptest results*: all the symptoms disappearing mostly on the first day of treatment. When the initial dose was insufficient, I repeated it *after a day's interval*.

IN CANCER OF THE PYLORUS, amelioration was obtained from 0.005-0.01 gramme [$\frac{1}{12}$ - $\frac{1}{6}$ grain] doses of COCAINE PHENATE MERCK, combined with 0.1 gramme [$1\frac{1}{2}$ grains] of CONDURANGO: the swelling at the pylorus was in several instances reduced sufficiently to permit of the passage of food into the intestines.

EVEN EPILEPSY, in two patients who had previously gone through some *gastric affection*—probably Round Ulcer—was cured by COCAINE PHENATE MERCK. In one of them the epileptic attacks recurred regularly every 8 weeks, always on Saturday. He had been treated unsuccessfully with Bromine for some time, by another physician. I administered one capsule of COCAINE PHENATE MERCK daily—before breakfast—for 14 days prior to each critical Saturday, with the result of *postponing and considerably moderating*

(171) *Usego*—JAPANESE BIBULOUS PAPER;—see MERCK'S BULLETIN, 1890; p. 151.

the first two subsequent attacks, and of *preventing them entirely* after that.

—Unfortunately, the *INTESTINES* cannot be reached with certainty for local therapy; for even the *keratinizing* of a medicament does not absolutely preclude its solution in the stomach.

—I succeeded several times in breaking up also *other local inflammatory processes*—such as *PLAURISY*—by *subcutaneous injections* of *COCAINE PHENATE MERCK*; but, later on, the site of injection became painful.—The same is true of *PNEUMONIA*, *SCIATICA*, etc.

—*I have not, as yet, found a solvent* suitable for this mode of administration of *COCAINE PHENATE*.

[N. B.—*COCAINE PHENATE* is but *slightly soluble in Cold Water*; this solubility, in the case of *Hydro-alcoholic* solutions, is increased by *heat*; which, however, *should not touch the boiling-point*.—A solution of *COCAINE PHENATE* in *Absolute Alcohol* can be *largely diluted with Anhydrous Glycerin*, without precipitation.—ED.]

—The number of minor *SURGICAL OPERATIONS* I performed under *COCAINE PHENATE anæsthesia* is too small, so far, to draw conclusions from.—*Merck's Bulletin*.

DENTAL COLLEGE COMMENCEMENTS.

UNIVERSITY OF MICHIGAN—COLLEGE OF DENTAL SURGERY.

At the forty-seventh annual commencement exercises of the College of Dental Surgery of the University of Michigan, held June 25th, 1891, the commencement oration was delivered by Daniel C. Gilman, LL. D., the degree of Doctor of Dental Surgery was conferred by the President of the University on the following named (29) persons:

Walter Horace Booth, Mich.
James Frank Cook, Ohio.
Manuel Vicente del Valle, Porto Rico.
Rokus Christian Devries, Mich.
Arthur Aaron Deyoe, Mich.
Frank Chester Dorrance, Mich.
Charles Henry Edwards, Mich.
Frederick William Fleming, Iowa.
Walter Jesse Green, Mich.
Frank Sydney Henry, Florida.
William Edward Kearns, Mich.
Gordon Grant McCoy, Ohio.
Austin McGuire, Mich.
Clinton Floyd Metcalf, Wash., D. C.
Arthur Werner Mueller, Wisconsin.

Pascal Pratt Nelson, Mich.
Charles Sigfried Rudolf Osius, Mich.
Michael More Park, Ontario.
Wilsie David Reed, Mich.
Clinton Robert Scott, Mich.
Alfred Louis Sickler, Mich.
Charles Perce Stone, Mich.
Jonathan Ray Taft, Ohio.
Lewis Carlisle Thayer, Mich.
Victor Emanuel Tuttle, Mich.
Eldon Waterloo, Mich.
Lucy Kate Waterloo, Mich.
William Williams, M. D., England.
Burt G. Winans, Mich.

UNIVERSITY OF MINNESOTA—COLLEGE OF DENTISTRY.

At the annual commencement exercises of the College of Dentistry, the Dental Department of the University of Minnesota, held at Minneapolis, Minn.,

June 4, 1891, the degree of Doctor of Dental Surgery was conferred on the following named (7) persons.

Breck, Henry Towne, Minneapolis.	Meckstroth, Louis Wesley, Minneapolis.
Chandler, Ella Z., Minneapolis.	Riddell, Edwin George, Northfield.
Lenox, Fred Augustus, Minneapolis.	Todd, Frank Chisholm, Minneapolis.
Marshal, Edgar Henry, Plainview.	

LOUISVILLE COLLEGE OF DENTISTRY.

At the annual commencement exercises of the Louisville College of Dentistry held at Macauley's Theater, Louisville, Ky., Wednesday evening, June 17, 1891, the degree of Doctor of Dental Surgery was conferred by Prof. L. H. Blandon, Chancellor of the University on the following named (26) gentlemen :

Otto B. Bachman.	C. M. MacDonald.
William J. Botkin.	Thaddeus J. J. Meder.
H. E. Cottingham.	Benjamin T. Messick.
George M. Dayton, M. D.	James Bashford Moore.
John C. Giltner.	Charles Park Peters.
Percy E. DeMille.	Chas. Walden Potter.
John T. Grant.	Wm. Sedwick Rogers.
James P. Gray.	Thomas B. Sanders.
August W. Gruebbel, Jr.	Charles H. Sharp.
David S. Henry.	Chas. Filmore Ulmer.
Elhanan M. Hight.	Emmet W. Wagoner.
Abraham Howe, Jr.	Daniel W. Whipple.
James M. Johnston.	John Haynes White.

HARVARD UNIVERSITY—DENTAL DEPARTMENT.

At the annual commencement exercises of the Dental Department of Harvard University, the degree of Doctor of Dental Medicine was conferred on the following named persons:

Boitel, Paul, Neuchatel, Switzerland.	Noble, Clarence M., Coaticook, Cana.
Brouillet, Geo. Antoine, Paris, France.	Owen, Hugh. Auckland, New Zealand.
Goldsmith, A. A., D.D.S. Chester, N. H.	Paul, Joseph Totten, Boston.
Hadley, A. I., (Univ. of Pa.) New Bedford.	Perry, George Barnum, Chicago, Ill.
Holden, George Meads, Lowell.	Sharp, W. T., D.D.S. (Univ. of Cal.) Sacramento.
Isawa, Shimpei Nobutsune, Tokia, Jap.	Woodcock, Fred Homer, Worcester.
Martin, G., D.D.S., (Univ. of Cal.) Oakland.	Fisher, Alex. Humboldt, Boston.

PRACTICAL NOTES.

A FEW "DON'TS" FOR DENTAL STUDENTS.

BY W. MITCHELL, D. D. S., LONDON, ENGLAND.

Don't think when beginning the study of dentistry there is any royal road to success; success can only be commanded by conscientious study and effort.

Don't think that theory and practice always go hand in hand;

practice proves theory to be at fault in many instances, finely spun laboratory experiments at times being thoroughly negated by practical tests, as illustrated by the difference of opinions as to the value of some germicides.

Don't fail to remember that some of our oldest and finest crusted theories are from purely theoretical men, had they *practiced* their profession we should not have had their *theory* as a stumbling-block, neither would they have needed our pity.

Don't ride hobbies, they have been known to exchange places, much to the discomfiture of the erstwhile rider.

Don't fail to try anything which after mature consideration promises success, for many times an easier and more effectual cure may result.

Don't accept the statement that medicaments afford the best means of purifying a root canal ; a pulp drill judiciously used possesses advantages superior in many instances to medication, effecting in seconds what would hardly be possible by any other means.

Don't fail to keep abreast with the times, after logically considering an advanced line of treatment, if the preponderance of conclusions are in its favor, try it, and note results, should it prove satisfactory in your hands, try and develop it, and improve upon it if possible.

Don't forget that "Order is Heaven's first law"; system and order in your work will prove a savior of time, energy, and many petty irritations that will inevitably occur where it is absent.

Don't fail to keep your instruments clean and in order. Time and money both will be saved by attention to these items.

Don't fail to keep a correct record of cases, it is a most satisfactory course to pursue for both patient and practitioner, as conclusions can be drawn therefrom, and data collected that are worth much more than the random statements we so often hear at our meetings.

Don't imagine that all the statements you hear at dental meetings are consonant with the practice of those who give them an airing; for not infrequently their precepts and practice are at utter variance.

Don't think for one moment that the statement of the man who "cleanses and fills every root canal perfectly" has any foundation other than in his own imagination; it cannot be done.

Don't think that capped pulps always die, they do not; but

many times surroundings may so modify treatment that devitalization and extirpation will promote the best results.

Don't forget that malaria is no small factor to consider in the treatment of pulpitis and pericementitis, and in many cases is the sole cause for solicitude.

Don't fail to notice that the roots of honeycombed or pitted teeth when in an inflamed condition break down and undergo necrotic degeneracy more rapidly and extensively than any other kind.

Don't be afraid to use a sharp sterilized bur freely about the end of a root where a roughened or necrotic condition exists, for by thus arresting retrograde metamorphosis, healthy action is promoted, and much benefit will be derived.

Don't fail to afford *free* drainage where suppurative or necrotic conditions exist; give nature a chance and she will assuredly assist you.

Don't fail to remember that sterilized cotton formed into required shape, saturated with thin sandarac varnish, (surplus varnish to be expressed between layers of blotting paper or napkin), makes one of the most satisfactory tents known.

Don't fail to remember after opening up an approximal cavity, and where a well contoured surface is required, pink gutta-percha is one of the best materials to temporarily fill the cavity with, to secure separation; a few days' mastication upon it will secure a good reparation without the soreness incidental to nearly all other methods.

Don't think because you hear noted men who now extol to the skies the superior virtues of amalgam and the plastics, these are the only filling materials; these men have proven themselves to be the weathercocks of the profession.

Don't think that gold cannot be used in many places where cements now find lodgment, for with a little more patience, and an earnest cultivation of a higher degree of manipulative dexterity, more cleanly and permanent operations are possible.

Don't be afraid to exchange ideas with your professional brethren; dentistry is made up of detail; other people have lucid intervals as well as yourself, and may be able to present an idea or method better than anything hitherto known.

Don't forget that a healthy conservatism is good, but a senile conservatism that would hamper and stifle progress can never be tolerated.

Don't imagine that an elaborate display of instruments is evidence of superior ability and capacity; it often means quite the reverse.

Don't fail to select the instruments *you* can use the best, or are best *adapted* to the requirements of the case; superfluous instruments are bewildering and cause unnecessary delay at all times.

Don't fail to notice the cheerful man who gets up in meeting and acquaints you of the fact that he has used your favorite method just mentioned "for years," as he has those of nearly every one else, but who has been too modest to mention the fact till some one calls attention to a good thing.

Don't fail to notice a near relative of the foregoing who sneers at everything new because it did not emanate from his brain; but who will sneak home and try it in a left-handed manner, and condemn it because he had not the capacity for its correct application.

Don't fail to be punctual in keeping your appointments; your patient's time may be of as much or more value than your own.

Don't condemn a professional brother upon the statement of a patient; patients can hardly be expected to be unprejudiced; a little salt with their remarks does a power of good.

Don't think that a stilted technical verbosity will impress your patients with your profundity or capacity; they will appreciate your services just as well if you *demonstrate* to them that *you know what you are talking about*, if they do not.

Don't think that your mission is filled when you have completed the treatment of a case; educate your patient how to *keep* the mouth in a state of health; until you have done this you have but partly filled your position as a dentist.

Don't fail to observe that mouth breathing in children is almost invariably associated with a very long uvula, chronically enlarged tonsils, or adenoid growths; call parent's attention to the necessity of treatment in such cases, it will save the patient much misery and suffering, and greatly promote the welfare of the teeth.

MEMORANDA.

What do you use as an obtunder?

Dr. G. C. Daboll will be at the Saratoga meeting.

B. L. Rhein, D. D. S., is associated with Dr. J. W. Crane, of Paris.

Dr. W. L. Croll is located 7A Manchester Square, London, England.

Dr. Thos. E. Weeks is called upon to mourn the loss of his wife, who died June 24th.

The American Dental Society of Europe will meet at Heidelberg August 3, 4 and 5, 1891.

The British Dental Association will meet at the Hotel Metropole, London, England, August 19, 20 and 21, 1891. Several Americans will be present at the sessions.

According to the annual report of the Board of Health, of Chicago, for 1889, there were in Chicago 390 dental "firms" giving employment to 425 males and 50 females.

Dr. W. C. Barrett, of Buffalo, N. Y., formerly editor of the *Independent Practitioner*, has accepted the professorship of Dental Anatomy and Pathology in the Chicago College of Dental Surgery.

Ohio has recently lost an old and highly respected dentist by the death of Dr. Frank C. Runyan, of Springfield. Dr. Runyan was a very energetic practitioner, and his loss will be greatly felt by his host of professional friends.

Papers on the "Sanitary Condition of Large Cities," by Dr. C. P. Pruyn, of Chicago, and on "Indigestion," by Dr. G. W. Haskins, of Chicago, were read before the late meeting of the Delta Sigma Delta at Lake Geneva.

The annual meeting of the Delta Sigma Delta Fraternity was held at Lake Geneva, Wis., July 7-11, 1891. Hereafter the Supreme Chapter will meet semi-annually. The next meeting will be held in Chicago, January, 1892.

The Southern Dental Association will meet at Moorhead City, North Carolina, Tuesday, Aug 11, 1891. Dr. G. F. S. Wright is president. The Atlantic Hotel will be an exceedingly pleasant place to rest during the meeting. A warm welcome will await any dentist who may be able to be present from any of the northern States.

The *Dental and Surgical Microcosm* a quarterly publication by the Hayes Dental and Surgical Manufacturing Co., of Chicago and Pittsburg, made its first appearance this month. In its salutatory it is said to be "the only journal in the world devoted chiefly to the *science of anesthesia, anesthetics and surgery*, in their co-operative relations in relieving suffering humanity, promoting health and saving life."

At the thirty-third annual meeting of the Indiana State Dental Association, held at Indianapolis, June 30, 1891, the following officers were elected: E. J. Church, La Porte, President; R. W. Van Valzah, Terre Haute, Vice President; G. E. Hunt, Indianapolis, Secretary; Merit Wells, Indianapolis, Treasurer. The association will meet the last Tuesday in June, 1892, at Lake Maxinkuckee, Ind.

G. E. HUNT, *Secretary*.

It is not our fault that we have not reported the establishment of any new dental colleges. The market has been very dull. But here we are again:

NEW DENTAL COLLEGE.

The Columbia College of Dental Surgery will soon be established over Slack's grocery store, Wabash ave and Madison street. The prime mover in the con-

cern is Dr. W. A. Jones, the former superintendent of the Chicago College of Dental Surgery. The concern has a capital stock of \$20,000.—*Daily paper.*

MICHIGAN DENTAL ASSOCIATION—CORRECTION.

We were in error last month in stating that the Michigan Dental Association would meet in July. The meeting will be held at Sault Ste. Marie August 18, 19 and 20, 1891.

AMERICAN DENTAL ASSOCIATION.

The thirty-first annual meeting of the American Dental Association will be held at Saratoga Springs, N. Y., commencing Tuesday, August 4, at 10 o'clock A. M.

GEO. H. CUSHING, *Secretary.*

NO!

Polite waitress—"Tea, doctor?"

Doctor—"No, coffee, if you please."

Waitress—Roast beef, doctor?"

Doctor—"If you please."

Waitress—"Corn, doctor?"

Doctor (indignantly)—"No, madam, I am a dentist."—*Drake's Magazine.*

MAKING HIS FORTUNE IN PARIS.

Cabassoul meets on the boulevard his old friend Gabagnal, who has been ten years away from France.

"Welcome back, old fellow! And where are you living now?"

"In Paris, of course."

"What are you doing?"

"Making my fortune—I am an American dentist."—*Paris Figaro.*

KENTUCKY STATE DENTAL ASSOCIATION.

At the annual meeting of the Kentucky State Dental Association the following officers were elected for the ensuing year: Dr. H. B. Tileston, Louisville, president; Dr. M. W. Steen, Augusta, vice president; Dr. J. F. Canine, Louisville, treasurer; Dr. J. H. Baldwin, Louisville, secretary; Dr. F. Peabody, Louisville, State board of dental examiners; Dr. B. O. Doyle, Louisville, executive committee; Dr. Irving Thompson Henderson, board of censors.

J. H. BALDWIN, *Secretary.*

OYSTERS WITH FALSE TEETH.

William H. Dexter, an oysterman, exhibited at the messenger office yesterday quite a curiosity, which he took from New River, near Cedar point, in Onslow county. It was two oysters fastened together at right angles, with a set of false teeth adhering to them at the intersection of the shells. The upper roof of the teeth was next to the shell, while the teeth were pointed outward. The teeth and gums were in a perfect state of preservation, although it is conjectured that they have been in the bottom of the river for some years. We are told by the oystermen that the oysters to which they were attached are of about three years' growth and a dentist tells us that the teeth are of a style made thirty years ago, although a few of the same style are yet made by some doctors.—*Wilmington Messenger.*

IMPORTANT NOTICE.

To the Editor:—The Central Traffic, Trunk Line, and Southern Passenger Associations have each granted a reduction of one and a third fare, round trip, on certificate plan for those attending meeting of the American Dental Association at Saratoga, commencing August 1st, reduced rates good three days prior to that date. The Western Passenger Association refused to give us a reduction in rates and the New England Association I have not yet heard from. The hotel rates at large hotels range from \$2 up to \$5 and \$6 and higher per day according to size and location of room. The cheaper and smaller hotels run from \$2 to \$4. The boarding houses at that time of year, run from \$1.50 to \$3, according to room. Those wishing to engage rooms in advance can do so by applying to Dr. A. C. Rich, Saratoga.

Yours truly,

J. N. CROUSE,

Chairman Executive Committee.

LIST OF HOUSES AT SARATOGA SPRINGS, N. Y.

The following places at Saratoga are recommended. The terms of all are reasonable and in many respects they are more comfortable than the hotels.

Name.	Proprietor.	Day.	Week.	Address.	Distance from Hall
Temple Grove...	A. B. Dowd	\$3.00.	\$12.00-20.00.	Saratoga Springs.	5 blocks.
Huestis House...	W. B. Huestis....	\$3.00.	\$17.50.	South Broadway, Saratoga Springs.	5 "
Kenmore	J. N. Ramsdill...	\$2.00.		Saratoga Springs, N. Y.	2 "
Albemarle*.....	W. J. Riggs.....				5 "
Balch House.....	W. S. Balch.....		\$12.50-17.50.	526 North Broadway, Saratoga Springs.	11½ "
Broadway House.	S. Hine.....	\$2.00.	\$10.00-14.00.	522 Broadway, Saratoga Springs.	1 "
Howland House..	J. Howland.....	\$2.00-2.50.	\$10.00-15.00.	573 North Broadway, Saratoga Springs.	3 "
Foley House.....	Miss M. C. Foley.	\$2.50.	\$14.00.	226 South Broadway, Saratoga Springs.	5 "
Garden View.....	Mrs. T. S. Carpenter.				1 "
Lafayette House.	Mrs. M. A. Root..	\$2.00-2.50.	\$10.00-15.00.	Corner of Lafayette and Circular.	4 "
The Linwood....	S. M. Van Deusen	\$2.00-2.50.	\$14.00-17.50.	South Broadway, Saratoga.	5 "
Trim Cottage....	Mrs. H. P. Trim.				4 "
Tefft House.....	T. T. Tefft.....				4 "
Summer Rest....	M. E. Morse.....	\$2.00-2.50.	\$10.00-15.00.	Saratoga Springs, N. Y.	5 "
Vermont House.	Mrs. C. M. Dyer..				1½ "
Washington Hall	A. J. Starr	\$2.50.	\$12.00-15.00.	587 North Broadway, Saratoga.	3 "

* Those left blank have not responded as to terms. The rate per week is for one person. —[Ed.]

MECHANICAL ADNASCENCE OF TEETH.

Dr. N. N. Znamensky, Moscow, publishes the following highly interesting communication on mechanical adnascence of artificial teeth:

Until now the only successful adnascence was observed in natural teeth of man and dogs; to cause adnascence of artificial teeth had never met with success. The author is the first one who has obtained satisfactory results: artificial teeth,

either of porcelain or of caoutchouc, inserted into the alveole, have become firmly adnate by mechanical process. Znamensky has performed these experiments in dogs as well as in men. It is of no importance for the success of the operation whether the artificial tooth is inserted in the place of a tooth just extracted, or whether the alveole has been closed for a long time; adnascence will take place with equal success, the tooth being of porcelain, metal or caoutchouc. Znamensky traverses the roots of the artificial teeth with apertures from the labial to the lingual surface, and a similar aperture is practiced from the mesial to the distal surface. It is feasible also to establish incisions in the circumference of the root. The marrow of the bone provides these apertures with a granulatory tissue which is ossified by degrees and in this way maintains the artificial tooth in the alveole with extraordinary firmness.—*Internationaler Pharmaceutischer General-Anzeiger*.

THE BACTERIA FAD.—SCIENCE GONE MAD IN THE HANDS OF ENTHUSIASTS.

These doctors are a wearisome lot, observes the *Milwaukee Sentinel*. If the world were foolish enough to attempt to follow all their suggestions and to avoid all that hygienic cranks declare to be dangerous, living would be impossible except under conditions that would make living intolerable. The latest fad, next to the disposition of surgeons to extirpate all the important organs of the body, is to find bacteria everywhere, and to warn people against doing, for fear of bacteria what it is necessary to do in order to get along at all. A Buffalo doctor has found nothing better to occupy his time or no better way to advertise himself than to examine under the microscope the straps in the street cars by which unhappy wretches maintain an upright position when the cars are crowded. He finds these straps "fairly reeking with bacteria." This is a strange use of the word reek. We might as well speak of the atmosphere as reeking with birds. Reeking means steaming or smoking. Bacteria have just as much right to be everywhere as birds and butterflies have to fly in the air, and they are for the most part as harmless. The idea the doctors seek to convey is that where there is microscopic life there is danger to health. If there is a space on earth where microscopic life does not exist, man cannot exist on that spot. The air we breathe, the water we drink, is full of harmless animalculæ, and would not be life sustaining otherwise.

We are warned against sneezing, except into a bacterium receiver, for fear of letting loose into the air destructive bacteria to attack the nasal membranes of other folks. We are warned against receiving money—hard money or paper money—without first putting it through a disinfecting process. We are told to go through the world with a strainer over the nose and the mouth, with carbolyzed gloves and so on. In short, if we are to stand any show of living to a reasonable age we are to shut ourselves up in gauze saturated with disinfecting preparations, drink distilled water, abstain from everything we like, and have no other concern in the world than the care of health.

There are certain reasonable sanitary rules based on a few facts of observation that are worthy of serious attention. They are not attended to ordinarily, because hygienic cranks urge so many ridiculous and impossible rules and so constantly shock the common sense of mankind. To ask a rational being to refrain from grasping a friend's hand for fear of bacteria, to deny himself the pleasure of osculation and all that is too much. If these doctors persist in pointing out mi-

microscopic life wherever they find it the thing is to recognize the fact that microscopical is edible and wholesome—raw, fried, stewed, baked or in any other form. We are made up—all of us and in every part of us—of microscopic organisms. A man is simply a collection of such organisms, every minute particle of his being having an independent life. There is nothing to be frightened at. Bacteria have been in the world a good while, and enough people have managed to live to make it a pretty active world.

OUR WEAKER HALF.

It is a fact familiar, of course, to all that the left hand, under normal conditions, is less useful than the right. It is weaker and apt to be smaller. The same is true of the foot. The cause of this difference is less apparent. It is commonly accounted for by asserting that we are a right-handed race by education; that infants are taught from the first by their parents and nurses to use the right hand in preference to the left, and that by constant use it has acquired the greater skill and strength. This explanation might be satisfactory were it not for the fact that the difference seems to extend to the whole body. Now we do not use one side of the body more than the other; the left foot has as much work to do in walking as the right. Apparently, palm-readers come nearer the truth than fortune-tellers generally do when they say that the right hand is the hand of the race, while the left is the hand of the individual. Health, fortune, disposition, and personal attainments, they say, make lines, convexities, and concavities in the palm of the left hand, and the matters that concern the family are recorded in the right. As the manifestation of a principle in a particular case would always be weaker than the principle itself, this belief of the chiromancers would explain why the left hand should be weaker than the right.

Taking the whole body, it is found that, as a rule, the left side is weaker than the right. The step of the right foot in both men and women is longer than that of the left, and the right foot is turned outward at an angle one or two degrees greater than that of the left. There is a tendency to turn to the left, as if the right side of the body were driven forward with greater power than the left. Close your eyes and try to walk in a straight line; the chances are that you will unconsciously veer to the left. What is still more curious is, that certain diseases seem to attack one side of the body by preference. It is the left side that suffers by this arrangement.

It has long been known that conditions due to excessive development, such as supernumerary organs, are commonly found on the right side, while the left is the chosen field for malignant disease, for abnormalities due to delayed union or arrested development, and for degenerative tissue change. Man goes to pieces on the left side with such rapidity that the outlook is less favorable in cases where disease attacks the left side than it is when it is the right side that is affected. A French physician, Dr. Broussole, has collected many facts to show that the work of surgeons and physicians is called for most to the left of the median line. Of organs in pairs, when only one is attacked by disease, it is usually the left one. Consumption beginning on the left lung is usually more hopeless than when the right lung is the first to present symptoms. Common ear troubles occur most frequently on the left side, and hæmorrhage of the brain is generally in the left hemisphere, causing paralysis of the right side of the body.

Epithelioma and malignant tumors have a decided predilection for the left side. Out of a list of thirty-seven cases of malignant tumors of the larynx, twenty-six began on the left side. It was on the left side that the first vegetations and ulcerations occurred in the case of the late Emperor Frederick of Germany. The teeth on the left side are smaller than on the right side, and anomalies and irregularities exist oftener among them. Diseases of the nervous system are most frequently found to affect the left side of the body.

The right side of the body has, however, certain diseases peculiar to it, in that they seem to attack it in preference to the left side. Lateral curvature of the spine is sometimes convex to the right and sometimes to the left, according to the origin of the disease. Pleurisy, carotid aneurism, wry-neck, and atrophy of the tongue are examples of diseases to which the right side is the more liable. Muscular atrophy is found oftener on the right side; and the same side is naturally the site of affections caused by the excessive use of a certain set of muscles, such as writer's cramp. A third class of diseases affect the right side or the left indifferently; but, having established themselves on one side, they rarely cross the median line to attack the other.

ARISTOL—ITS THERAPEUTIC USES.

Daniel Lewis, M. D., publishes in the *Medical Record* of June 6th a summary of his experience in the use of aristol:

The powder, without admixture, applied to an ulcer attended with copious and offensive discharge, promptly abolished the odor and checked the discharge within twenty-four hours. It favors the formation of a scab, when healing by this process is indicated. For application to ulceration of the cervix uteri it can be readily applied by means of a cotton tampon smeared with vaseline, to which the powder will adhere. Such cases as were attended with induration, thickening, and suppuration were all promptly improved.

*Aristol and iodo*l in equal parts, applied by means of a speculum and powder-blower to similar conditions, and retained in position with tampons of cotton, were also convenient and efficacious. The same mixture applied twice daily in cases of chronic nasal catarrh, when the discharge was profuse or fetid, caused marked and permanent improvement without irritation.

Ointment of aristol with petrolatum or cold cream was useful in skin affections having a tendency to form pus, or in which mild stimulation was wanted. For fresh wounds, as well as for the foregoing, a larger proportion than four to thirty will be requisite.

Moist gauze of aristol, dusted with the powder, is more desirable as a surgical dressing.

Solution in liquid petrolates, *e. g.*, "albolene" or "benzoinol," is a satisfactory application when a moist dressing is advisable, and is sometimes available as a vaginal or uterine application.

Flexible collodion with aristol is said by the writer to be one of the most valuable of its preparations. With it abrasions of the skin may be covered. Excessive perspiration of the hands was relieved by it after a short period of use. Erysipelas in its early stages, coated with this preparation, was, in several instances mentioned, shortened in duration, the writer declaring it to have been more effective than anything he has ever employed—not excepting white lead paint, which Mr. Barwell, of London, has found so useful.

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ORIGINAL COMMUNICATIONS.

PREPARATION OF CAVITIES.*

By C. N. JOHNSON, L. D. S., D. D. S., CHICAGO.

It would scarcely seem judicious to lay particular stress upon any one part of the operation in the process of filling teeth as requiring more care than another. Every step in the process has an importance all its own, and neglect of any detail is likely to prove disastrous to the operation. And yet I am inclined to the opinion that a greater number of failures result from imperfect preparation of the cavity than from any other cause. The longer I operate, the greater length of time do I find myself spending on the preparation of the cavity in relation to the time spent in the entire operation. There are so many things to be considered when a cavity is being prepared that it is more or less of a tax on the operator to get everything in a perfectly satisfactory condition.

It is not enough simply to make the cavity of such a shape that it will retain the filling, nor is it sufficient that we remove all decay and drill out all fissures. Important as these matters are there is a final step in the preparation of cavities which is too often almost entirely overlooked or at least held in so little concern by the operator that special attention is not paid to it and an otherwise well prepared cavity is left with a defective feature which sooner or later results in failure of the filling. I refer of course to the treatment of enamel borders. This part of the subject is worthy of a somewhat extended paper in itself as is evidenced by the articles of Dr. Black in the January and February numbers of the *Dental Cosmos*.

*Read before the Odontographic Society, May, 1891.

I am sorry that this series of articles are not completed at the writing of this paper as it would relieve me of anything but the mere mention of the subject. As it is I can do no better than to refer you to the ones already published and to those which may follow in the same line.

Cavities as considered in relation to their preparation may be divided into three general classes, viz.: proximal, grinding surface and buccal, labial or lingual. The three latter may be considered as one class, their treatment in preparation being practically similar.

In dealing with proximal cavities the first requisite is space. This question of separation was considered by the essayist who read a paper a month ago, and may be dismissed by me with the remark that I am in favor of gaining plenty of space before operating.

If the cavity is in a molar or bicuspid it will under ordinary circumstances be necessary to open it up to the grinding surface so as to make a compound cavity of it. Usually these cavities do not manifest themselves to the patient or operator till the grinding surface is so much undermined as to make it unsafe to leave it, especially if there is another tooth standing in line to hide the proximal decay. Even in some cases where the grinding surface is reasonably strong it is deemed the best practice to break it down to facilitate the operation. Where there is a tooth standing next to the decayed surface it is usually difficult to gain sufficient access to the cavity from the buccal aspect to make sure of a good operation, and even if a good operation may be made there is another consideration which favors wide cutting. It is termed by Dr. Black "extension for prevention" and means a broadening of the cavity to bring the line between filling and tooth away from the point of greatest liability to decay. Of course it is not advocated as an invariable rule to open up through the grinding surface wherever there is proximal decay, but in the weight of judgment the balance should usually swing in that direction. In cases where there is no tooth in line to prevent examination of the surface a cavity is usually detected earlier in the process of decay and there is less danger of the grinding surface being undermined. The operator also has such perfect command of the cavity by reason of there being nothing in the way that it is never necessary to break down the grinding surface to gain access. This form of proximal cavity is one of the simplest we have to deal with. The principal points

in its preparation are a removal of the decay, a deepening of the cavity at opposite corners to secure retention of the filling, and a careful beveling and polishing of the enamel margins.

In a compound cavity the first step after dryness is secured is to break away all weak or overhanging walls, and in this connection we may consider that a wall is weak when there is any indication that it will be fractured by the strongest force that mastication is likely to bring upon it. Walls that should be broken away are often left standing through lack of judgment in one particular. The operator argues that if mastication has not already fractured them there is little danger that it will do so when they are supported by filling material. The fact is lost sight of that a tooth with a carious cavity is usually sensitive, and the patient in masticating intuitively avoids chewing anything hard on it.

Thus a tooth may stand in this condition for an extended time with weak, overhanging walls. As soon as the cavity is filled and the tooth made comfortable for mastication, the patient uses it and the consequence usually is another wreck added to the long list of failures in dental operations. It is no indication that a wall is strong simply because it is found apparently standing guard over a cavity.

In breaking away these walls a chisel is usually best for the rougher part of the work. The chisel should be sharp and a light tap given it by the mallet instead of hand pressure. It is less unpleasant to the patient to submit to a sharp decisive blow of the mallet than to have the enamel ground or rasped away by hand pressure.

This grating at the enamel margins with the chisel is very distressing to most patients, and coming, as it does, in the beginning of the operation is likely to unnerve a sensitive individual throughout the whole sitting. In fact there are some patients who thus early in the operation can ill submit to the use of the chisel at all, and in such cases we must use other means for trimming away these walls. This can often be done quite readily where the cavity already extends to the grinding surface, by the use of coarse sand-paper discs in the engine. The overhanging enamel approaching the cusps may be trimmed off by this means quite rapidly and with little or no shock to the patient.

In cases where the grinding surface wall has not been broken in it is usually quite difficult to fracture it with the chisel on account

of the strong arch of enamel overhanging the cavity. To facilitate matters a small sharp drill should be used in the engine and a slot cut through the arch of enamel running from the fissure between the cusps on the grinding surface to the ragged edge of the overhanging enamel border on the proximal margin. This destroys at once the integrity of the arch much as if its keystone were suddenly removed, and the enamel may then be broken down with the slightest tap of the mallet.

The operator should avoid as much as possible giving the patient any undue shock in the early part of the sitting. With a nervous individual in the chair a careless blow of the mallet in breaking down enamel will render the patient unsettled and apprehensive during the whole operation, and a patient in this condition proves very trying to the operator. To operate on one who is always expecting to be hurt and whose eyes are continually endeavoring to follow the instrument in the operator's hand is annoying in the extreme and cannot fail diverting the attention of the operator to a degree that prevents a due absorption in the work.

After the overhanging enamel is broken down the next step is the removal of all decalcified dentine. This should be done thoroughly if there is no likelihood of the pulp being exposed, and just here occurs the necessity for a perfect knowledge of the probable location of the pulp in each individual tooth. This matter has not heretofore received enough attention in the instruction of dental students, and I consider it as the most important among the many other good things taught by the present system of operative technics. It is important in view of the extent to which the dentine is saturated with deleterious agents for some distance from the actual decay that as much of the infected tissue be removed as possible short of encroachment on the pulp. But if the pulp be nearly exposed it will usually remain more comfortable if a layer of partially decalcified dentine is left over it and this treated antiseptically in the manner with which you are all familiar.

The next step after decay has been removed is to shape the cavity for the retention of the filling.

This can ordinarily be done to better advantage in most cavities with the engine, though there are occasionally cases where properly shaped excavators will be found serviceable. It goes without saying that all burs, drills, excavators, or other instruments used in the preparation of cavities should be sharp. There is no other

form of imposition practiced on a patient that is of so cruel a nature as the use of dull, blunt instruments.

The shape which is to be given the cavity must be governed largely by the case in hand. The most that can be done in a paper like this is to give a few general rules and even these are subject to modification in individual cases. In shaping for retention where grooves are necessary they should be drilled with a view to obtaining the greatest amount of strength to the filling and walls of the cavity, consistent with care against encroaching on the pulp. It may be laid down as a rule that a filling cannot be fastened in too securely, so that where there is a degree of doubt as to the amount of retention required let the decision fall on the safe side and choose the alternative of getting more retention than seems absolutely necessary rather than take the chances of having not quite enough.

Usually the most desirable places for drilling grooves in these proximal cavities are along the buccal and lingual walls with rather a deep depression in the cervico-buccal and cervico-lingual corners. In bicuspsids the fissure between the cusps will usually be so defective that as a preventative against future decay it will be necessary to drill it out, and in some cases even if decay is not probable it is good practice to cut out the fissure for the purpose of assisting in the retention of the filling. In these teeth it is sometimes difficult to get secure anchorage along the walls on account of the small bulk of sound, firm tooth tissue, and in those cases it is better to take advantage of the fissure for the purpose of making a "staple" to the filling at this point rather than run the risk of encroaching on the pulp or weakening the thin walls of the cavity by drilling deep grooves along the sides.

Operators sometimes hesitate to drill between cusps through fear of weakening the tooth and rendering it more liable to split, but in any case where a fissure is at all perceptible to the naked eye, or where the finest exploring instrument can penetrate, the assurance may be had that there is no coalescence of the enamel running down from the two cusps and therefore no strength given it at this point. To broaden the fissure with a drill and insert a good indestructible filling material is to add strength rather than take it away. Of course judgment must be used not to go too deep so as to cut through the sound dentine.

From observation I am inclined to believe that there is a great lack of thoroughness on the part of many operators in drilling out

fissures on the grinding surface of molars and bicuspid. These fissures are always a weak point in a tooth and when extending from a cavity should invariably be drilled out to the extreme end. Possibly the reason they are so often left is because it is somewhat tedious to do the work thoroughly, but this should not influence the operator in the slightest degree. I have found no drills in the market at all suitable for this work, and for several years have been using a drill made in the following manner. A worn out inverted cone bur is ground on two sides to a sharp edge on the end, as you will see by these I exhibit. This form of drill will work its way between two strong plates of enamel with an astonishing rapidity. It will facilitate the cutting if the handpiece of the engine is swayed back and forth while the drilling is being done, and with these means at hand there is no excuse for slighting fissures.

The cervical portion of the cavity requires careful preparation. The floor looking from the cervical border toward the pulp should be as nearly as may be horizontal, if anything dipped slightly in the direction of the pulp. This does not mean that a high, sharp ridge of enamel be left standing as is often done. In fact enamel borders should be as carefully treated in this region as in others, and though the work is more difficult on account of the position yet it will well repay the time spent on it. It is sometimes difficult to know what instrument may be used to the best advantage for trimming enamel margins in this locality. Probably the greatest number of cases may be reached with a medium sized engine bur, having extremely strong blades such as are cut on finishing burs. These will cut enamel sufficiently fast and are not so likely to catch on the edges of the enamel and be jarred out of place as burs with large blades. If it is found difficult to guide the bur along the edge of the enamel it will sometimes be practical to let the shank of the bur rest on the edge of the cavity at the grinding surface, or on the angle of the proximal and grinding surfaces of the tooth next in line. This will help to guide the bur and bring it under better command.

As before intimated, the inner angle of the cavity at the cervico-buccal and cervico-lingual corners should be somewhat deepened. This will form a pocket into which the filling may be started and will also prevent the filling from tilting as the cervical portion is being consolidated.

In respect to the outline given the orifice of the cavity, a mis-

take is often made by leaving the opening toward the grinding surface too narrow. There are several reasons for broadening these cavities. If decay has gone on to any extent the dentine is usually involved in the direction of the cusps, and unsupported enamel should not be left in this region. Then better access can be obtained to the cavity by broadening the orifice, and last but not least we are working on the principle before mentioned of extending the cavity for prevention of secondary decay. To put it in brief, it is safe to claim that broad proximal fillings where the line between filling and tooth is carried well away from contact with the adjacent tooth gives better service than narrow fillings no matter how carefully inserted.

For opening up these cavities and trimming back the enamel toward the cusps I know of nothing equal to a sandpaper disc in the engine. The margins may be beveled, polished and made symmetrical in a very short time by this method.

In dealing with proximal cavities in anterior teeth we may begin with the same requirement as for molars and bicuspid, viz., plenty of space. The general shape to be given an ordinary proximal cavity in an incisor or cuspid is also governed by the rule which calls for the maximum of strength with the minimum of danger. The main retaining groove should in the majority of cases be drilled along the cervical floor of the cavity on account of the extra bulk of tooth tissue at that point. This groove should be deepened into a corner at the cervico-lingual aspect of the cavity and also to a slight degree at the cervico-labial, though if much of an undercut is made at this point it will call for extra care in adapting the filling. The gold must be carried around the margin of the cavity and well up into the groove with curved instruments which will enable the operator to direct the force of the plugger back against the labial wall.

The facility with which an ordinary plugger will reach the cervico-lingual region by direct pressure, and the greater amount of tissue covering the pulp at this point, admits of a deeper undercut there than elsewhere. We often see the result of too deep a groove along the labial wall where care has not been exercised in getting the gold well adapted in a discoloration under the enamel. A filling in this condition should at once be removed and a better one inserted, for while the margins may appear perfect the discoloration indicates a leakage somewhere, and proves that there is lack of

conformity of the filling to the cavity wall at its inner part.

The object of deepening the cervical groove at the two ends, as just mentioned, is not only to retain the filling in place but to assist in anchoring the first pieces of gold in position without the danger of the whole mass tipping as the filling progresses. This does away with the necessity for drilling pits, and just here I wish to make a distinction in terms where there is often too little discrimination used. We hear the term retaining pits used almost invariably when speaking of the little pits drilled in the bottom of the cavity. As I understand this question there is no such a thing as a retaining pit. These pits do not retain a filling. If we depended on nothing but two or three of these pits drilled in a saucer-shaped cavity how long would our filling remain no matter what care was exercised in impacting the gold? Invariably the filling would come out, leaving the pits filled with small plugs of gold. There is little or no strength to these minute plugs when lateral pressure is exerted on them, so that they cannot be depended upon for retaining the filling. What then is their office? They are drilled for the purpose of anchoring the first piece of gold in some one place and holding it there while other gold is being added to it. Consequently their proper name is anchorage pits.

When we come to providing for retention of the filling, if the general outline of the cavity is not suitable, we then drill grooves and in this case it is perfectly proper to use the term retaining. I make a plea then for the terms anchorage pits and retaining grooves, and while the terminology is by no means new, yet so many of the profession make no distinction that it is misleading to students and the younger members of the profession.

Now as to the advisability of drilling these anchorage pits I am so thoroughly opposed to them personally that I hesitate about writing much on the subject for fear of being considered prejudiced. In the days when cohesive gold was employed almost exclusively there may have been good grounds for their use, but with our present methods of operating I can see no necessity for them. There may occasionally be a case where they are serviceable, but I cannot recall an instance in my practice within the last five or six years where I have thought it necessary or advisable to resort to them. To detail a method of starting the filling without them is not within the province of the present paper.

In securing retention of the filling toward the cutting edge of

an incisor, where a good deep groove is possible along the cervical margin, it is not necessary to undercut to any great extent at this point. A good square shoulder with a slight depression at the inner angle of the cavity toward the cutting edge is all that is required. In most cases, as has been intimated, the deepest undercut must be at the cervical margin, and yet there are exceptions to this.

For instance in a lateral incisor with a very narrow neck and a cavity quite high up on the tooth, it then becomes dangerous to attempt much drilling in this region if the pulp is alive. In these cases we must secure retention as best we may, and if the cavity does not extend too far down toward the cutting edge we can get a good undercut in the lower part of the cavity, and depend upon that mostly for retention.

In giving outline to the margins of these cavities a mistake is frequently made in not sloping the cavity away enough toward the neck and cutting edge. A somewhat rounded outline is made instead of an oval outline. These round cavities, if decay has been at all extensive, are objectionable for several reasons. An outline cut like this leaves sharp angles to the enamel margins which are usually followed by failure of the filling at the borders. It is difficult to adapt gold against these sharp angles without fracturing the edges of enamel, and even if this could be done successfully there is a still better argument in favor of extending these cavities longitudinally. It brings the line between filling and tooth away from the point of greatest liability to decay, and is right in the line of extension for prevention. To do this most successfully and give symmetry to the margins, where the decay has involved either the labial or lingual walls, a sandpaper strip may be used to advantage.

The preparation of grinding surface cavities in molars and bicuspid requires little description except to say that the walls should be made as nearly as may be perpendicular. A cavity with too much undercut is in danger from breakage of the overhanging walls, and a cavity left saucer shaped will not retain the filling. If a deviation is made either way from the perpendicular it had best be in the direction of making the cavity slightly broader at the floor than at the orifice. It is better to be doubly sure of retaining the filling than not quite sure enough. This must be regulated largely by the depth of the cavity. A shallow cavity will require more drilling into sound tissue for retention than a deep one.

In lower molars where the direction of the fissures results in the cavity being somewhat the shape of a cross, the corners of the enamel which approach the point where the fissures intersect should be broken down and the cavity changed to approach the form of a square with the sides facing the cusps.

The length of this paper prevents anything but a mere reference to buccal, lingual or labial cavities. The great difficulty in preparing these cavities if at all extensive is to control the gum which usually grows down into the cavity. The best means of overcoming this trouble is to place a large gutta-percha plug into the cavity and let it extend well out over the cervical border so as to press the gum back. If this is left in a week the gum will be forced away from the margin of the cavity without being wounded so as to prevent trouble from bleeding. Occasionally where there is no time to press the gum back with gutta-percha, it may be cut away with a lancet, but this usually causes quite extensive bleeding on account of the congested condition the gum is usually found in under these circumstances, and this interferes so materially with the work that it is always best to use the gutta-percha if possible. I should consider it preferable to try gutta-percha even if it were to be left in only one night.

As to the shape of the cavity, this must be governed entirely by the case in hand and little can be said save to gain retention at opposite sides of the cavity and in that portion of the tooth having the most sound tissue covering the pulp.

I have now considered somewhat hurriedly some of the most important points in the preparation of ordinary cavities. The subject is so broad that I have been obliged to avoid details in description as much as possible and I have dealt only with typical cavities.

We find in practice so many variations from the regular forms I have mentioned that it would be impossible in a single paper to even refer to them in a general way. Many of the variations are worthy of detailed treatment in a paper by itself, and I submit for your consideration a subject so broad in extent, and so important in practice that I have found myself in something of a dilemma to determine what was most profitable for presentation.

SELF-CULTURE OR POST GRADUATE STUDY.*

BY CHAS. P. PRUYN, M. D., D. D. S., CHICAGO.

Self-culture, which embraces the subject of post graduate study, includes the education or training of all parts of a man's nature; the physical and moral, as well as the intellectual. Each must be developed, and yet each must yield something to satisfy the claims of the others. Cultivate the physical powers exclusively, and you have an athlete or a savage; the moral only, and you have an enthusiast or a maniac; the intellectual only, and you have a diseased oddity, it may be a monster. It is only by wisely training all three together that the complete man can be formed.

My idea in this paper is to show that something more than the reading of books is necessary in post graduate study; most of the writers upon this subject during the last few years have emphasized the importance of reading a certain number of books, all of which is desirable: but a less number of books carefully studied and digested is much better than to attempt too much and fail in the undertaking.

Daily out-door manly sports and exercises, such as rowing, horse-back riding, bicycle riding and sports of a like character are indispensable to men of sedentary habits (such as we are, who give all of our time to the active practice of our profession).

In our day such exercises do not command the attention of professional gentlemen as they should, and education has become more exclusively mental; very much to the detriment of bodily health. The brain is cultivated at the expense of the members, and the physical is usually found in an inverse ratio to the intellectual appetite. Hence, in this age of progress, we find so many physical dyspeptics, with stomachs weak as blotting paper, and what is known as the tobacco heart or hearts indicating "fatty degeneration"—unused, pithless hands, calveless legs and limp bodies, without any elastic spring in them. But it is not merely health that suffers by neglect and disuse of the bodily organs. The mind itself grows sickly and distempered, the pursuit of knowledge itself is impeded, and manhood becomes withered, twisted and stunted. It is, perhaps, to this neglect of physical exercise that we find among dentists so frequent a tendency toward discontent, unhappiness, irritability, etc.—displaying itself in a needless disgust with the profes-

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sion of their choice. The only remedy for this uncalled for sickness is abundant physical exercise, so that the various emunctories of the system shall be stimulated to perform their proper function, and the mind be able to retain and put into use that which has been learned from books.

Practical success in life depends much more upon physical health than is generally imagined.

It is said that the Duke of Wellington, when once looking on at the boys engaged in their sports in the play-ground at Eton, where he had spent his own juvenile days, made the pregnant remark, "It was there that the battle of Waterloo was won."

There are many young men who leave college full of the learning of ancient and modern Æsculapians, who, as regards the use of their own hands and application of the knowledge taught them to professional life, are almost helpless.

Elihu Burritt even found hard labor *necessary* to enable him to study with effect; and more than once he gave up school-keeping and study, and taking to his leather apron again, went back to his blacksmith's forge and anvil, for his health of body and mind's sake.

The success of professional men depends in no slight degree on their organic stamina and cultivated physical strength. Thus a well-developed thorax I consider almost as indispensable to the successful dentist as a well-cultured intellect. The thorough æration of the blood, by free exposure to a large breathing surface in the lungs is necessary to maintain that full vital power on which the vigorous working of the brain in so large a measure depends.

It is in the physical man that the moral as well as the intellectual man lies hid; and it is through the bodily organs that the mind itself works. As wine savors of the case wherein it is kept, the mind receives a tincture from the body, through which it works.

While it is necessary then in the first place to secure this solid foundation of physical health, it must also be observed that sustained application is the inevitable price which must be paid for mental acquisitions of all sorts; and it is as futile to expect them without it, as to look for a harvest where the seed has not been sown.

It is astonishing how much may be accomplished in post graduate study by the energetic and the persevering, who are careful to

avail themselves of opportunities, and use up the fragments of spare time which the thoughtless permit to run to waste.

I am such an earnest believer in the power of industry or stick-to-itiveness that I hold that all men may achieve excellence if they will but exercise the power of assiduous and studious working. I am a firm believer in that genius which exhibits itself in patient study and labor. Some one has said, "If you have great talents, industry will improve them; if you have but moderate abilities, industry will supply their deficiency."

Genius, without work, is certainly a dumb oracle; and it is unquestionably true that the men of the highest genius have invariably been found to be among the most plodding, hard-working and intent men—their chief characteristic apparently consisting simply in their power of laboring more intensely and effectively than others.

The value of knowledge to any man certainly consists not in its quantity, but mainly in the good uses to which he may apply it. Hence a little knowledge of an exact and perfect character is always found more valuable for practical purposes than any extent of superficial learning.

But a liberal mental culture in all that pertains to the fundamentals of general medicine, seems to be almost a prerequisite for the dentist, as the continuous application of the mind and body, to the treatment of the diseases that naturally come under our care, have the tendency to narrow our range of vision and cause us to become biased, so that we can see no farther than the organs upon which we are called to operate.

Therefore, unless we have some systematized method of study which will draw us out beyond our daily range of thought, we very soon become machines, rather than true professional men.

I sometimes wonder how large a percentage of our practitioners, both graduates and non-graduates, have an intelligent knowledge of our Dental Materia Medica and Therapeutics. A very easy way to accomplish this task in a thorough manner would be to take up the study of one drug a week, and read all that you can find upon it and give it your thought while performing your usual duties. It will prove to be a great pleasure rather than a task, and in one year only, a very large amount of practical information could be obtained by simply adopting a system of reading and study and holding to it.

Or take up any other line of study that might suggest itself to your mind and pursue it in the same manner and you will soon find that it does not become irksome, but decidedly the reverse.

Take up the study of the different filling materials or combinations, and you will find in it a very fruitful field indeed, that will well repay all the labor put forth, even though you may think that you already know all there is to know about them. The study of electricity and its uses in dentistry would greatly interest many men.

If a person pursues this line of study as above set forth, to the exclusion of all else, he makes a serious mistake; as some general reading is needed besides all this study.

The works of Shakespeare, Milton, Byron, Bacon, Chaucer, Wordsworth, Huxley, Tyndall, Victor Hugo, George Eliot, Tolstoi and a host of others that I might mention, ought to be in the library of every dentist.

It is not the quality of study that one gets through or the amount of reading that makes a wise man; but the application of the study to the purpose for which it is pursued; the concentration of the mind for the time being, upon the subject under consideration; and the habitual discipline by which the whole system of mental application is regulated.

Abernethy was even of opinion that there was a point of saturation in his own mind, and that if he took into it something more than it could hold, it only had the effect of pushing something else out. And my experience is of a similar nature, as I find that if I attempt to grasp too many facts at once, I have a heterogeneous mass that is of no use to myself nor to those upon whom I am called to operate.

There is no want of desire on the part of most persons at this day to arrive at the results of self-culture, but there is a great aversion to pay the inevitable price for it, of hard work.

In education we too often invent labor-saving processes. We get our smattering of the sciences in that way. We learn chemistry by listening to a short course of lectures enlivened by experiments, and when we have made nitrous oxide, seen green water turned to red, and phosphorus burnt in oxygen, we have got our smattering, of which the most that can be said is, that though it may be better than nothing it is yet good for nothing.

To be wise we must diligently apply ourselves. We must be

satisfied to work energetically with a purpose, and wait the results with patience.

The student of to-day who rightly apprehends the needs of the hour, will find in the study of chemistry alone one of the most profitable fields in which he can engage; profitable for the mental discipline which he will receive, and for the added knowledge which he can turn to practical use in dental practice. I fancy that the time is not very far distant when some earnest investigator will discover a cement for filling carious teeth that will be absolutely insoluble in the fluids of the mouth.

The education received at school and college is but a beginning and is mainly valuable in so far as it trains us in the habit of continuous application and facilitates self-education after a definite plan and system.

Often the best education of a man is that which he gives himself, while engaged in the active pursuits of practical life.

Knowledge conquered by labor becomes a possession—a property entirely our own. And facts thus acquired become registered in the mind in a way that mere imparted information can never produce.

A few years since, Dr. Barrett, in an editorial in the *Independent Practitioner* commenting upon an article written by Dr. J. D. Moody, upon post graduate study, suggested that the time was not far distant when such a course of study would be gladly welcomed by a large number of good practitioners who were nongraduates, but self-made men who had grown up into the ranks of our profession, and were able men and an ornament to the profession as well, but were not satisfied with their present attainments, and would greatly desire a course of study in their homes, which would help to keep them abreast of the times.

The demand for such a course of reading is very much greater to-day than ever before, but we still patiently wait for the advent of some member of our literati to outline it for us. And while I do not presume to dictate what such a course should be, I might be able to suggest some of the things it should not be.

First, it should not be too heavy in quantity or quality, as if it were it would thus defeat the object for which it was intended. The first year course should be sufficiently elementary in character to gain the sympathy and coöperation of the majority of the practitioners of dentistry of to-day, and who are not college graduates;

nevertheless, many of these same men are the ones who have striven hard to bring our specialty from nothing up to its present high standard.

And they are still anxious to continue the good work in which they have been engaged many years, but cannot for several reasons take a full course at college but could find the time to pursue a course of reading that would develop them in their chosen calling and still not interfere with their daily duties. Now, gentlemen, these are the men I plead for, not for the literati of our profession, as they will care for themselves, but for the average man as we find him, patiently and perseveringly trying to make himself better, and thus benefit his patients, his profession and his country.

The second year course should be more profound than the first, still keeping in mind the early educational advantages of its readers, as well as the hard daily work they are compelled to perform to sustain their families.

The third year course still harder, and so on.

It might be a wise thing if a joint committee of the American and Southern Dental Associations should take this matter in hand and conduct a Chautauqua dental reading circle, or a Chautauqua post-graduate dental study circle, or something similar. Or until we have the authority of some intellectually constituted organization, each one might constitute himself a committee to look the matter up and get all the information possible, and by love and good works attempt to enlist his friends in the enterprise with him.

Dr. Arnold has said, "If there be one thing on earth which is truly admirable, it is to see God's wisdom blessing an inferiority of natural powers, when they have been honestly, truly and zealously cultivated."

A great fund of knowledge may be accumulated without any purpose; and though a source of pleasure to the possessor, it may be of little use to any one else. It is not mere literary culture that makes a man. For it is possible to have read many books and waded through many sciences and yet to possess no sound intellectual discipline; whilst others, without any regular scholastic culture may, by the diligent exercise of their judgment and observation, have acquired eminent mental vigor.

Merely reading a book does not necessarily mean a study of that book, for we find that the great majority of readers are not

able to give even a meager synopsis of the contents of a book after having read it.

Reading is one thing, but studying is another thing altogether.

One good book thoroughly studied and its contents retained is much better than a dozen indifferently read.

The usual reason given for so little study after one gets into active practice, is lack of time. A very poor objection, for the reason that if the same amount of time should be put into careful study that is now wasted in reading the daily papers one year, would make you master of any of the sciences. During both my dental and medical college pupilage I seldom saw a newspaper and do not think that I was injured in the least by their non-perusal. The excessive reading of the daily papers by our American people I claim to be an injury rather than a benefit, as so much is taken into the brain we do not try to retain, that the retentive powers are gradually weakened thereby.

It is possible that at this day we may even exaggerate the importance of literary culture. We are apt to imagine that because we possess many libraries, institutes and museums, we are making great progress.

“The possession of a library or the free use of it, no more constitutes learning than the possession of wealth constitutes generosity.”

Though we undoubtedly possess great facilities, it is nevertheless true that wisdom and understanding can only become the possession of individual men by travelling the old road of observation, attention, perseverance and industry.

The multitude of books which modern readers wade through may produce distraction as much as culture. Reading is often but a mere passive reception of other men's thoughts ; there being little or no active effort of the mind in the transaction.

A man perfects himself by work much more than by reading. They are a growing kind of men that can wisely combine the two things—wisely, valiantly can do what is laid to their hand in their present sphere, and prepare themselves withal for doing other wider things, if such lie before them.

It is also to be borne in mind that the experience gathered from books, though often valuable, is but of the nature of learning ; whereas the experience gained from actual life is of the nature of wisdom.

Many of our most energetic and useful workers have been but sparing readers. John Hunter could barely read or write when he was twenty years old, though he could make tables and chairs with any carpenter in the trade.

It is not how much a man may know that is of so much importance, as the end and purpose for which he knows it. The object of knowledge should be to mature wisdom and improve character, to render us better, happier and more useful; more benevolent, more energetic and more efficient in the pursuit of every high purpose in life. We must ourselves *be* and *do*, and not rest satisfied merely with reading and meditating over what other men have written and done. Our best light must be made life, and our best thought action. The humblest and least literary must train his sense of duty, and accustom himself to an orderly and diligent life. Though talents are the gift of nature, the highest virtue may be acquired by men of the humblest abilities, through careful self-discipline.

It is not necessary that we should insist on the use of knowledge as a means of "getting on" in life. This is already sufficiently taught by obvious self-interest; and it is beginning to be pretty generally understood that self-culture is one of the best possible investments of time and labor. In any line of life, intelligence will enable a man to adapt himself more readily to circumstances, suggest to him improved methods of work, and render him more apt, skilled and effective in all respects. He who works with his head as well as his hands, will come to look at his business with a clearer eye; and he will become conscious of increasing power—perhaps the most cheering consciousness the human mind can cherish.

It is doubtless most honorable for a man to labor to elevate himself, and to better his condition in society, but this is not to be done at the sacrifice of himself. To make the mind the mere drudge of the body is putting it to a very servile use; and to go about whining and bemoaning our pitiful lot, because we fail in achieving that success in life, which after all depends rather upon habits of industry and attention to business details, than upon knowledge, is the mark of a small and often of a sour mind.

CHRISTIAN SCIENCE IN DENTISTRY.*

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Within the past year it has been my good fortune to learn from personal experience, extended observation and indubitable testimony that all things are governed by Divine mind, which is the principle of Life, Truth and Love. That to know God is man's highest privilege, and that this understanding brings into his life a wonderful degree of harmony enhancing his usefulness, health and happiness. It is, doubtless, evident to you that this knowledge is the result of investigation of Christian Science. The Divine definition of Science is the atmosphere of God. Its human construction is "Knowledge duly arranged and referred to general truths and principles on which it is founded and from which it is derived."

Christian Science cure or "The Christ Cure," was discovered by Mary B. A. Eddy, in 1866, through instant recovery from an injury which no medicine or surgery could reach. The first text book on the subject was soon published by her called "Science and Health with Key to the Scriptures" now in its fiftieth edition (a copy of which I ordered two months ago and have not yet received). This book, the simple reading of which has healed thousands, is not in any sense intended as a substitute for, but is a key to the Spiritual and only true interpretation of the Bible. These two books being the constant companions and study of all true Christian Scientists, with the Key, the treasures of Truth are revealed. God's word is a hundred fold more precious (because understood), the "crooked paths are made straight and the rough paths smooth." For many years I have been a member of an orthodox church, but until realizing somewhat the Truth of Being, as it is in Christian Science religion had for me or mine but little practical value; our calling is essentially a practical one, and because Christian Science is most intensely practical, do I introduce it to you to day.

It is no "Boston craze;" it is the sober second thought of advancing humanity; the time for *thinkers* has come; Truth independent of time-honored systems knocks at the portal of humanity; contentment with the past and the cold conventionality of materialism no longer bar the door to progress. "Tho' empires fall, He whose right it is shall reign!" Ignorance of God is no longer the stepping stone to faith; the only guarantee of obedience is a right appre-

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hension of Him "whom to know aright is life eternal!" Characteristic of this age is a developing interest in the occult sciences; and the signs of the times indicate a decided tendency to desert the beaten track of material medicine and seek relief in the realm of the supernatural. Dr. Benjamin Waterhouse, professor in Harvard University, declares himself "sick of learned quackery." Dr. Jas. Johnson, surgeon extraordinary to the king, says: "I declare my conscientious opinion, founded on long observation and reflection, that if there was not a single physician, surgeon, apothecary, man-midwife, chemist, druggist, or drug on the face of the earth there would be less sickness and less mortality." Dr. Mason Good, a learned professor in London, said: "The effects of medicine on the human system are in the highest degree uncertain," except, indeed, that it has already destroyed more lives than war, pestilence and famine combined. Dr. R. K. Noyes in his history of medicine says: "A drug or substance can never be called a healer of disease. There is no reason, justice or necessity in the use of drugs in diseases. I believe that this profession, this art, this misnamed knowledge of medicine is none other than a practice of fundamentally fallacious principles, impotent for good, morally wrong and bodily hurtful."

In Second Chronicles King Asa is described as "diseased in his feet, yet in his disease he sought not the Lord but to the physicians; and Asa slept with his fathers and died." All followers of the humble Nazarene will admit that He "healed all manner of diseases" without scalpel, forceps or drugs. He commanded his students to go and heal the sick, nor did he tell them to first study anatomy, pathology, chemistry or physiology. The certain woman who had suffered many things of many physicians, had spent all that she had and was nothing bettered, but rather grew worse, would at this day have many sympathizers.

I would not seem to disparage the efforts of honest physicians, for I have many warm enduring friendships, which began in the old halls, class and dissecting rooms of Harvard Medical College; but it is the false theory that is maintained. The substitution of the material for the Spiritual—the man-made system of Godless experiment that I condemn. Our Savior on the cross emphasized his disapproval of material medicine by refusing the sponge of vinegar. My former pastor, Rev. Dr. A. J. Gordon, Clarendon St., Boston, said in a sermon: "The prayer of faith shall save the

sick" and it is doing it to-day and as the faith of the church increases, and christians more and more learn their duty to believe all things written in the Scriptures, will such manifestations of God's power increase among us;" such sentiments are wholesome acknowledgments of Divine Mind healing. God is not unable nor unwilling to heal and mortals are not compelled to have other gods before him and employ material forms to meet a mental want. The Divine Spirit supplies all human needs. Jesus said to the sick, "thy sins are forgiven thee ; arise and walk." God's pardon is the destruction of "all the ills that flesh is heir to." Christian Science often suffers blame through the ignorance of the people, it involves a new language and a higher demonstration of medicine and religion. It is the new tongue of Truth having its best interpretation in the power of Christianity to heal. Dr. Talmage writes in the *New York World*, May 4, 1890: "I have personal knowledge of cases of cure which must have been direct from God. I saw one such in London. I went to the room where there were perhaps fifty invalids, because I had heard that marvellous things were occurring at this the most famous Faith Cure in the world. I went to hear the testimony for myself. There was a poor woman near me who especially attracted my attention and sympathy. Her arm and wrist were twisted and distorted with inflammatory rheumatism. The wrist and hand were much inflamed and very red. The muscles were contracted into complete helplessness. It was a case which at a glance you would have pronounced incurable. Every now and then Dr. Boardman, who told how Christ, when on earth, healed the sick, would pause and ask "Do you believe?" after a time this poor woman cried in a voice that resounded throughout the room, "I *do* believe!" and stretched out her arm and hand as straight as you can stretch out yours. If I had seen one rise from the dead I could not have been more thoroughly stirred, excited, enthused, inspired.

Now, I don't know how other people account for this, but I came away saying, "There may be something in this faith cure which it is best not to laugh at—best not to deride. The progress of the government of God *may after awhile*—I don't say it will, but it *may*—be in that direction. It may be that by the healing of the sick and the performance of other wonderful things the true church of Jesus Christ will be established." *This*, from the leading light of the world's pulpit. He would utter no such equivocal opinion

if he were *wholly*—as he evidently is in part—a scientist. He says farther—(in answer to a query)—every family of people have a right to do as they please in such matters ; if they want to try skill they have a right. If they prefer to trust faith, their right to do so is just the same. They have a right to call in a homœopathist or an allopathist or a faith healer, just as they prefer. They are bound to do what they believe to be best, but what *is* best in such a case? The same objection which is made to the Faith curer whom they call would apply to the physician if they summoned one. If they sent for a homœopathist and the patient died some would blame them for not calling an allopathist instead. If they sent for an allopathist some would say the patient's life would have been saved by a homœopathist. *In many cases the physician does more harm than good anyhow.* “These eloquent men are but voicing the prophecy of modern thought, and the dawn of its fulfillment is seen in the marvellous spread of Christian Science, which recognizes no Life, Substance or Intelligence in matter, but that all is mind and mind is God (Good).”

It is sound in every part. It is neither warped nor misconceived when properly demonstrated. If it lacked the proof of its origin in God, it would be self-destructive for it rests alone on the demonstration of God's supremacy and omnipotence. Right thinking and right acting, physical and moral harmony come with science and the secret of its presence lies in the universal need of better health and morals. Even doctors will agree that infidelity, ignorance and quackery have never met the growing wants of humanity. The question now at issue is, shall we have a practical, spiritual Christianity with its healing power, or shall we have material medicine and superficial religion? Sickness has had its doctors, but is there less sickness because of these practitioners? Our yawning cemeteries and the longevity of the antedeluvians answer—No! Christian Science mind healing is dishonored by those who take it up from mercenary motives—for wealth and fame, or think to build a baseless fabric of their own on another's foundation. Dishonesty destroys one's ability to heal mentally.

It necessarily stultifies the spiritual sense which is indispensable to Divine mind healing. The dishonest mental practitioner sorely wrongs himself and others. Dr. Talmadge is an authority on dentistry also—as witness his description of his early experience. The doctor led us to the back piazza and sat us on the

steps. Whether we were promised candy, a ride or a pair of new boots we do not recall, but whatever it was it did not seem adequate for the sufferings proposed, he brought out a long pair of forceps. There were in its very looks, twists, grips and clutches that made the toothache instantly stop (clerical testimony to the fact that suffering is not in matter).

Then we argued the uselessness of extraction because it did not ache a bit ; they did not allow us to finish the argument ; we were never more logical in our life ; we had laid down two propositions of a syllogism, 1st, painless teeth ought not to be extracted ; 2d, this is a painless tooth. But before we could draw the conclusion the doctor had begun to draw the tooth. He took our head between his knees, one tight against each ear. The memory of those knees will never fade away. They seemed to be the *Ne plus ultra* of all knees. He had hard work to get into our mouth, it was so full of holler ; but getting his hand on one side of the unrestrained yell and his turnkey on the other he went in. At last the cold steel was laid aside the sore gums and while we were clutching the doctor's arm and biting his finger as hard as we could and kicking indiscriminately in all directions and giving him a look as much as to say: "Old fellow, if I live to get over this, won't I give it to you! !" The doctor gave one resolute pull and it seemed as if the roots of the neck had given away, etc., etc. Well, the graphic record is proof that the patient recovered.

"An infant crying in the night,
An infant crying for the light
And with no language but a cry."

The poor woman that Dr. Talmage heard cry for physical succour, received the answer to her request, but if the healing she had received the *understanding* of *how* she was healed, she would have been made, like the leper, who returned to give thanks, "every whit whole." Millions are believing in God, blindly groping; not having apprehended Truth they cannot say, "I know in whom I have believed." The Faith cure has many devout followers whose practice is far in advance of their theory. There is danger in this mental state called belief. For if truth is admitted but not understood, error may enter through this same channel of ignorant belief, the multifarious forms of which are expressed in the electrical, chemical and magnetic forces of mortal mind, which have no cognizance

of, and are in direct opposition to the Spirit which made man (the real man) in His image and likeness and pronounced him very good.

St. Augustine once said ' "The Devil is but the ape of God."

The various forms of animal magnetism are aping God (Good), under the disguise of mesmerism, alias mind cure, alias hypnotism, spiritualism and theosophy; dangerous counterfeits are they in proportion as they approached the Truth, and this flood of charlatan teachers, healers and authors who, with their mental mixtures and mistakes, often called "metaphysical" methods, are far more fatal to sanitary reform, sound morals, health and longevity than the old-fashioned empirical treatment by blood letting poisonous drugs and other multifarious modes of frightening people to death.

Animal magnetism is literally demonology. The following is quoted from the *Boston Herald*: "Mesmerism is a problem not lending itself to an easy explanation and development. It implies the exercise of despotic control and is much more likely to be abused by its possessor than otherwise employed for the individual or society." *Science and Health* (from which I freely quote) says every Christian Scientist, every conscientious teacher of the science of mind healing knows that hypnotism is error; is the action of one mortal mind taking control of another without the other's knowledge or consent and is practiced from mistake or wicked motives and blasts the moral sense, health and human life. We say that one mortal mind can influence another and thereby affect the body, but we rarely remember that we govern our own bodies, the social error of mesmerism or hypnotism illustrates the fact. The operator makes his subject believe they cannot move a certain part of the body, the tongue or the leg for instance; and they cannot, until at last their belief is better instructed and emancipated by *understanding*, which masters both belief and fear. He produces pain by making his victims believe they feel it. Here pain is proven to be a belief without an adequate cause.

So the sick through belief have induced their own stiff joints and cramped muscles. The only difference between voluntary and involuntary mesmerism is, that one is induced consciously and the other unconsciously.

A late dental journal records the following: Removal of a sarcomatous breast from a girl of 20 years who was easily thrown into the hypnotic state. The entire organ with the aponeurosis of the

pectoralis major was removed. Five drainage tubes inserted, wound closed with 32 metallic sutures—operation lasting an hour.

The narrator, Dr. Schmetz, says: I operated quite slowly and at my ease, the patient even tried to encourage me by her words, seemed very gay and laughed loudly from time to time as if to show that she felt no pain. She was told not to feel pain and to have a good night which was obeyed and the wound was completely healed on the 15th day; another case is detailed in the *Items of Interest* for March by J. G. Lane, of Philadelphia. The young lady patient had two very sensitive cavities of decay filled painlessly, as well as *unconsciously*, with gold said she felt no pain whatever, did not know that any operation was being performed. While under the hypnotic influence any request made by the hypnotist (an embryonic Doctor of Divinity) was immediately obeyed, while the commands of the operator were entirely disregarded." The editor of the Chicago *Herald* also instances clinical experiments in England with hypnotism on patients of all ages from eight years to middle life for severe surgical operations, at which time one of the foremost surgeons of England, Mr. Pridgen Teale, said the time had come "when we medical men shall have to recognize hypnotism as a necessary part of our study." I quote farther from the *Herald*—"Dr. Bramwell showed a man in whom he had re-established temperate habits by hypnotic suggestion. Here is a large field for this remedy. It would be intemperate to predict that all cases of intemperance will be found amenable to *hypnotic suggestion*:—some intemperate people follow no sort of *suggestion* except one to take a drink. But this is a great field for hypnotic experiments—we can scarcely conceive of the good results that would follow its *successful* use in curing drinking habits. It may be easily used for criminal purposes by the unscrupulous. Its use should be confined to those who know how and when to use it. Public exhibitions of its effects and use should be prohibited and punished. The interests of the public demand this." In the same journal is related the experience of a fourteen year old lad who replaced five teeth which the kick of a horse had knocked out. After a few days the teeth were again firm in place but whenever afterward he approached the horse within a distance of ten feet, agonizing pain was felt in and about the replaced teeth to such an extent that he would roll on the ground in the paroxysms; all the symptoms subsiding instantly on separating the two. In spite of this the lad was mysteriously

attracted to the animal while retaining the teeth, which when removed all the symptoms vanished. This article is entitled *Animal Magnetism*—could a more fitting caption be suggested?

No greater contrast of opposites can be conceived of physically, morally and spiritually than animal magnetism, mesmerism, hypnotism, spiritualism and theosophy on the one hand, and on the other Divine mind healing, as Jesus used it by *understanding* the utter absence of life, substance or intelligence in matter; that all intelligence was God. That he was God's highest idea as we are also, hence he called us *his brothers*; that, being made in the image and likeness of God, we always were and always will be *perfect*; "even as our Father which is in Heaven (Harmony) is perfect."

This omnipotent, all-wise, loving Father never made an imperfect *man*—not even Guiteau, or Benedict Arnold, nor even that arch traitor, Judas Iscariot—though seeming at the last to be a sample of poor cooerage.

If a spiritualist medium understood the science of mind healing he would know that between those who have and those who have not passed through the transition called death there can be no interchange of consciousness and that *all sensible phenomena are merely subjective states of mortal mind*.

Theosophy is a corruption of Judaism. This corruption had a renewal in the Neoplatonic philosophy, but it sprang from the oriental philosophy of Brahminism, and blends with its magic and enchantments. Theosophy is no more allied with Christian Science than the odor of the upas tree is to the sweet breath of spring tide, or the brilliant corruscations of the northern sky are to solar heat and light. But as the magicians and sorcerers of Egypt before Pharaoh were successful for a while with their rods, yet at last their rods were swallowed up by that of Aaron. So at last will error in all its forms be destroyed by Truth—who is God, is Love and a consuming fire.

Christian Science is not susceptible of being held a mere theory; it is hoary with time. It takes hold on eternity, voices the infinite, and governs the universe. A philosophy which cannot heal the sick has little resemblance to science, and is, to say the least, like a cloud without rain.

Ignorant of the fact that mental belief produces disease; the ordinary physician goes on establishing disease—with his own mind—then addresses himself to the work of destroying it by the

power of matter, when Science *removes* the disease by addressing the mind and giving no heed to the body, is proof that mortal mind creates the suffering. Do you suffer the pain of tooth extraction under nitrous oxide gas? Yet the tooth, the operation and forceps are unchanged. I remove teeth daily without pain or anæsthetics, knowing that life is not in matter. I have in past years cherished keen sympathy for my patients, fully realizing its fatiguing effect on myself, but I did *not* know that it doubled the sufferings of my grateful (?) patient. I have been very familiar for many years with the use of anæsthetics in all varieties of surgery, but I find the need of them fast disappearing. The lessening of liability to periosteal inflammation, alveolar abscess and sensitive dentine is very marked. Fear being the cause of disease it is lessened in proportion to our understanding of Truth—and results in the advent of a great degree of harmony, pervading our lives.

For ten years I was dependent on glasses. I can now see better without than ever. Nothing is more disheartening than to believe there is a power opposed to God (Good) and that He endows this power with strength to be used against Himself, against Health, Harmony and Immortality. That mother is not a Christian Scientist and her affections need better aids, who says to her child "you look sick!" or "you look tired," or "you need medicine."

Mortal mind is the builder of the mortal body of Immortal Mind of the Immortal Body. Appetite resides in mind not in matter.

These various threads of truth if followed will lead him who is looking to the finished, harmonious, (because heavenly) everlasting fabric, unchangeable and eternal.

In closing this multiloquent *sermon*, I will say that men in all vocations and especially ours which so severely taxes the vital force, have found the science to greatly enhance their physical and mental powers, to enlarge their perception of character, to give them acuteness and comprehensiveness and an ability to go beyond their ordinary business capacity. The mind imbued with this science becomes more elastic, is capable of greater endurance and requires less repose.

Prof. Agassiz has wisely said, every great scientific truth goes through three stages; 1st, People say "It conflicts with the Bible;" Next, They say it had been discovered before; Lastly, They say they always believed it. In closing I wish to pay a loving tribute to the memory of my dear old friend, and our co-laborer, Dr. W. H.

Atkinson, of New York City, whose hearty inspiring face and presence and whose kindly advice so generously given, will be keenly missed at gatherings like this all over our land. May we all, like him, be often visited by the angels [God's messages to man], and these heavenly visitors entertained will inspire also us, during this earth life, in the task of working out our own salvation.

PRESIDENT'S ANNUAL ADDRESS.*

BY DR. W. W. VANCE, KEARNEY, NEB.

In casting about for a subject on which to write at this time, the thought occurred to me that a presidential address should be such an one as would touch upon things pertaining to the workings and effects of the organization to which it is addressed. Then this will in the natural course of things touch upon things connected with our State Dental Society.

I was forcibly struck with a remark that Dr. Ingersoll, of Iowa, made to Dr. Morsman, when the latter gentleman was in the chair of the Iowa State Dental Society.

Dr. Ingersoll said, I hope you will give us something better than the regulation presidential address—something out of the regular line. Now as no one in our Society has made any such remark to me I do not know whether I will be giving one of those regulation kind or not, for I am frank to admit that I am not so well posted as our good brother over in Iowa on what constitutes the regulation kind, and not having such an occasion as the one referred to cannot ask. Then again I have not attended so many society meetings as our good brother, Dr. Ingersoll, and have not had the knowledge from observation. But Dr. Morsman gave an address that he thought was out of the regular order, and while I think it was a good address, I thought there were perhaps some things in the regular order that were worth saying after all. I will not promise you an address that will be out of, or in the regular order, but will try to turn your thoughts to some things that I think if acted on and carried out would be of mutual benefit to the members of our society. The object of our annual gatherings is for mutual improvement and interchange of thoughts and views on any and all things that may have come before the individual members from time to time in the course of our year of professional ser-

*Read before the Nebraska State Dental Society, May, 1891.

vice, for ours is a progressive profession and the individual that does not labor for advancement is likely to be left in the race, and will certainly stand still if he does not retrograde. Then there are things that ought to be done if our society serves that purpose to the best possible advantage, and I take it that my suggestions should be of such a character as to turn your thoughts toward means for improvement; and wherein they do not do that, in the discussions which ought to follow this paper they should be brought out.

There is one thing that has been made very impressive to me while acting in the capacity of chairman of your executive committee which I think might as well be touched upon in the beginning of this paper as at any other time, for it is rather an unpleasant part of it and I like to have unpleasant things off my mind and out of the way as soon as possible. This is in regard to the preparation of our annual programmes. What I may say on this subject while it may sound harsh is only intended to work good to the results of our meetings.

Dentists as a class are too little given to writing. It is an unpleasant task and we all seem to shrink from it as much as possible. This is not as it should be and it is with shame I am forced to reprove you for it. We find greater solace and comfort in working, not alone with the hands, but with the mind as well, than in transcribing our observations and researches to paper to be read and commented upon in our society meetings, there to be made use of for our own benefit and that of others. Now look at the consequences of this. It is a very mean man and one not worthy to be a member of our profession, who, when he has discovered a method of doing something that is better than that followed by his preceptors and teachers, who wraps his professional cloak closer around him and congratulates himself that he is better than his fellows and will not give them the opportunity of trying his so-called new methods or discussing them with him, wherein some suggestion or change might be made that would be a benefit to both. How much better it would be for us all to give a little time out of each day to transcribing some of the conclusions and results of our experiments to paper to be stored up and ready for use when called upon to contribute something for the programmes of society meetings. Label them "Items of Interest" and you will be surprised at what a little collection of good thoughts you will have gathered up in a few

months that will be of interest if presented at the meeting of the society.

One of the greatest drawbacks encountered by your committee in the preparation of the programme of (what has turned out to be a most interesting meeting) was the seeming indifference of members of the profession when asked to contribute something to the literary part of our programme and my heart almost sank within me when I contemplated the outcome of it all; from many of you I could get no reply, others had first one excuse and then another, until it seemed as if failure to get a programme out was imminent. Now I do not think that this was any intentional neglect on your part; with some it was fear of lack of ability to present anything that would be acceptable to the society. Others were backward and preferred to learn rather than attempt to teach. While others as a matter of fact had treasured up nothing to present either in a paper or clinic, through all the months since our last meeting and only thought of the matter when solicited to present something to the society, when for lack of time were forced to decline.

Gentlemen on the back seats, wake up and show your manhood; if you are found among those who are striving to give us something to study and think about you will receive more benefit than by merely coming to "learn."

If you love your profession do not be backward about striving to advance it, and show by your effort to be among those in the front rank that you are ready to do your part. If it cannot be the most brilliant success, let it be as near to that mark as in your power to make it, and perhaps the suggestions made in the discussions will make you capable of winning laurels at your next attempt. Do not be afraid of being crowded in the front rank, there is plenty of room, and let it be remembered that more has been learned by the progressive men in this and every other scientific society, from mistakes than from brilliant successes.

Channing has said, "We can fix our eyes on perfection, and make almost everything speed toward it," but mistakes must be made, or we can never prove our successes. What we need in our societies are talkers and workers; we have thinkers, but having thought they simply apply that to themselves, and no one has a chance to share the thought with them or help them to carry out a train of thought or investigation.

We have been lamenting the fact that we have no celebrities in

our own society. What makes celebrities? Certainly not going to the society meetings simply to learn. If you have a hobby let us hear from you, and let us hear from you in earnest; do not be afraid that some one will not be entertained by your ideas. If you have a conviction that some particular mode of procedure is best, then stand by it; I like to see a man with the courage to uphold his convictions. If you think plastic fillings for the back teeth are best, give us your thoughts on the subject, and come prepared to demonstrate your ideas with a clinic, and do not wait until you are importuned to do something for the society programme, but offer to do it. By your actions let it be known that you are a living example of what you advocate; this is what makes celebrities, or at least one of the very necessary constituents. I am very well satisfied in my own mind that there are a great many men who have given the best part of their lives to and bent all of their energies in the direction of improvement in our beloved profession who, while not enjoying the reputation of so-called celebrities are not one whit less capable and it is only because of a partly natural and partly cultivated modesty and reticence that has kept them from becoming as much sought after in our society meetings as others who do enjoy the distinction of celebrities.

I fear I have given you a bitter pill and as it is considered good pharmacy to sugar coat a bitter pill, I will sugar coat this one by giving you a little flattery (not vain flattery, but well-earned compliments). It is my purpose to give you some other thoughts besides fault-finding for having responded so unwillingly to the requests of your executive committee for help, by saying that I think what has been done at this meeting will be remembered as instructive and show that we have many good demonstrators in our ranks, and I cannot help but think that the impress of this meeting will be felt in your practice throughout the coming year, and that you will be more enthusiastic at subsequent meetings than you have been in the past.

Our profession is a progressive one and necessarily so because it would be an improbable thing that where so many men the requirements of which to make successful practitioners of dentistry is mechanical skill and ingenuity, together with intelligence and education, could stand still, or at least a majority of them stand still, when the field for the exercise of inventive and manipulative skill is so great as it is in the practice of dentistry.

Consequently it is necessary that every man who wishes to keep pace with the rank and file must be up and doing and it is no wonder that our profession is the most progressive and can show a greater improvement for the same length of time than any other science extant, save that of electricity alone. This is partly because we draw from so many branches of scientific research for our work and the consequent centering of the efforts of many different minds; minds that have had careful training and the science attracting only those that have natural proclivities for mechanics, has caused the congregation of a host of intelligent well educated and ingenious persons and this rank and file has been recruited from the best talent of every community. It is but a natural consequence that our profession should be the most progressive of any.

It is through the efforts made at the various society meetings and the reports from which the journals of our profession are supplied, in part, that this knowledge is disseminated, and I congratulate you on the success of our meeting.

I trust that the Nebraska State Dental Society may ever be found in the front ranks and that we as a society may have the well-earned reputation of being fully abreast of the times and that our meeting may not only be looked forward to with pleasure and anticipated profit by our own men but as well by the professional brethren of other States.

DENTAL LITERATURE.

BY DR. H. J. COLE, Norfolk, Neb.*

The literature of the dental profession fifty years ago was very limited indeed; and with the birth of dental colleges a new era dawned upon our literature—the growth keeping pace with the demand, and to-day it is such that we may well feel proud of it.

A few even go so far as to assert that in all directions “the profession is largely written out,” which is certainly a dangerous assertion, especially so if the profession were inclined to accept it.

Who will say that in the application of the laws of correlation to the restoration of lost dentures in harmony with the physical organization has been “written out.” We must all admit that as yet prosthetic dentistry is far from being an exact science. And

*Read before the Nebraska State Dental Society, May, 1891.

only by a more thorough and perfect knowledge of the laws of correspondence are we able to apply the same to each individual case that presents itself.

In another direction, a compilation of the testimony of a score or more of critical scientific men upon the influence of intermarriage upon the dentures of the progeny would form a very valuable contribution concerning the physical and mental results of consanguineous generation.

Probably the most valuable addition to our literature recently have been the works on irregularities of the teeth and their treatment or correction. One by Eugene S. Talbot and the other by J. N. Farrar.

But still there seems to be plenty of room for further thought and research as to the etiology of dental irregularities.

In that very excellent work, "The American System of Dentistry" compiled by Litch ; Dr. G. V. Black, of Illinois, in his communication on "Diseases of the Peridental Membrane" devotes considerable space to the so-called "Riggs' disease." The late venerable Atkinson and others of considerable note have given us contributions, yet how much do we know about the cause of that dreadful disease which causes the loss of many of those beautiful organs that we are laboring so zealously to preserve.

Who is to be the investigator that will enlighten us as to the cause of that dark green stain, that we so often find about the necks of the anterior teeth of our young people rendering them so very unsightly. Not what you think it is but we want to know what it really is. These are a few of the different lines that suggest themselves upon which we need more light—demonstrated facts, scientific contributions if you please.

I have already referred to the two works that have lately been added to our literature on "Irregularities of the Teeth and Treatment," but one of these deserves more than a passing notice, that by John N. Farrar, M. D., D. D. S., of New York City.

The first volume takes up the history and etiology of irregularities ; the basal principles of regulation ; principles of construction of apparatus retaining devices ; laboratory rules for manufacturing devices ; application of force ; eruption ; antagonism, interdental spaces and the correction of irregularities by grinding and by extraction.

The second volume contains the classification of irregularities

and the various methods of treatment, such as straightening teeth to line; turning and elevating teeth; widening the dental arch and the correction of protruding teeth.

The third volume is largely illustrative—bringing together as it were, the mechanisms described in the other volumes, into an object lesson.

In addition to the two works referred to above, there have been recently published the following works pertaining to dentistry: A System of Oral Surgery, by James E. Garretson, A. M., M. D., D. D. S.

A Compendium of Dental Pathology and Dental Medicine, by Geo. W. Warren, D. D. S.

Artificial Crown and Bridge Work, by Geo. Evans, D. D. S.

Descriptive Anatomy of the Human Teeth, by G. V. Black, M. D., D. D. S.

Dental Chemistry and Metallurgy, by Clifford Mitchell, M. D.

Dental Surgery for Medical Practitioners and Students, by A. W. Barrett, M. B., M. R. C. S.

Manual of Dental Anatomy, by Chas. S. Tomes, M. A., F. R. S.

Manual of Dental Surgery, by Henry Sewill, M. R. C. S., L. D. S.

Microorganisms of the Human Mouth, by W. D. Miller, D. D. S., M. D.

Practical Dental Metallurgy, by Thomas Fletcher, F. C. S.

Plastics and Plastic Fillings, by J. Foster Flagg, D. D. S.

Principles and Practice of General Surgery, by John Ashhurst, Jr., M. D.

Students' Manual and Hand Book for the Laboratory, by L. P. Haskell, D. D. S.

The Dental Laboratory, by Theo. F. Chupein, D. D. S.

A Dictionary of Dental Science and Such Words and Phrases of the Collateral Sciences as Pertain to the Art and Practice of Dentistry, by Chapin A. Harris, M. D., D. D. S.

Catching's Compendium of Practical Dentistry, by B. H. Catching, D. D. S.

Under the head of journals pertaining to the science of dentistry America leads the world. She publishes twelve monthlies, one bi-monthly, and six quarterlies.

England publishes three monthlies, and France five, while Germany is the only country that supports a weekly, three monthlies,

one bi-monthly, and one quarterly; Austria, one quarterly; Cuba, two monthlies; Italy, one monthly and one quarterly; Russia, Spain and Switzerland, one monthly to each.*

Your committee reports in actual existence to-day thirty-three dental colleges with a total attendance of over 3,100, by far the largest attendance in the history of dental colleges.

With a few others from our State society I had the pleasure of attending the last meeting of the American Dental Association at Excelsior Springs, Mo., and you will bear me out in saying that the subject of dental education provoked more discussion and brought forth a greater variety of views than any other one subject that came before that body.

Some of the ideas expressed in papers and discussions seemed quite visionary and to our untutored mind far from practical.

Some would have our system of education under the control of the general government, with the commissioner of education a member of the president's cabinet, ranking third in position—secretary of state, treasurer, then education, etc.

Others would have established at Washington a National dental college, with the power of conferring a new degree—D. O. S., doctor of oral surgery—and have a National dental law, and debar all from practicing till the new degree is obtained.

Of what practical value such ideas are to the present condition of our dental colleges I fail to see, but certain it is that something seems to be wrong with our system of dental education, and the colleges throughout the country think to right the wrong by extending the time required for graduation from two to three years; but as long as the present system exists, the young man that has the "necessary wherewith" will matriculate and "get through," notwithstanding his unfitness or lack of qualifications, whilst his brother of limited means is forced to seek some other vocation, be his natural fitness for our profession ever so good.

Don't know that I have any plan to suggest that would remedy the existing difficulty, but surely the schools should devise some means whereby the honest practitioner of ten to twenty years' experience should have some advantage over the youth fresh from the farm or village school.

* From Paper on Dental Education, by Louis Ottofy.

APPARATUS FOR CLEFT PALATE.*

BY W. B. AMES, D. D. S., CHICAGO.

In order to give assistance, mechanically, to a patient afflicted with a defective palatal organ, it is most necessary that we have an understanding of the form and structure of the normal natural part, and an understanding of the means by which the changes in its conformation and position are brought about.

Not because the mechanical appliance can be made in duplicate of the natural part, having the mobility on which depends largely the proper formation of the major portion of articulate sounds, but because, by having an understanding of the functions of the normal organ and the means by which its movements are brought about, we can construct the mechanical appliance so that, in connection with the deformed parts it will most nearly answer the purposes of the normal organ.

The first question which naturally arises is, what is the function of the natural organ? We cannot, however, study to advantage the function of the soft palate without first studying the form and uses of the cavity of the pharynx, of which the soft palate is really an auxiliary. The pharynx is the immediate upward termination of the œsophagus. Posteriorly and on two sides its walls are closed. Its anterior aspect is in direct connection with three cavities, namely, the larynx, the cavity of the mouth, and the nasal cavity. Above it presents a blind termination against the base of the skull, and at its lower extremity it contracts just behind the larynx into a narrow slit which leads into the œsophagus, which is closed from the contraction of its walls. We may thus regard the pharynx as an air passage, as terminating at this slit, because at this point it ceases to be an open tube. The pharynx proper is kept always open, by the attachment of the tissues forming its walls to the bones of the skull and the hyoid bone. An uninterrupted passage is thus secured to the inspired air from the nasal cavity through the pharynx and thence through the wind-pipe into the lungs.

The anterior aspect of the pharynx, which as we have seen, is not closed as are its other walls, must now have our special attention. It is in direct communication with the larynx, the cavity of the mouth and nasal cavity. The opening into the larynx is

*Read before the Chicago Dental Society.

guarded by a valve, the epiglottis, which in the quiescent state and except during swallowing, gives free passage to the inspired and expired air. The cavity of the mouth is closed at the rear during ordinary breathing, as is properly performed through the nose, by the soft palate, which hangs in the form of a crescent shaped valve, from the posterior border of the hard palate into close contact with the dorsum of the tongue. This is the position of the soft palate in its passive state. When it is necessary for the production of certain sounds that the expired air shall be thrown through the cavity of the mouth, the soft palate can be raised so as to thoroughly separate the oral from the nasal portion of the pharynx, thus throwing the volume of air into the mouth. It is this movement of the soft palate that most interests us, as it is this separation of the oral cavity and oral portion of the pharynx from the nasal cavity and nasal portion of the pharynx that renders the production of pure vowel sounds possible. While the chief function of the soft palate is its valve-like action in separating the nasal cavity from the lower portion of the pharynx and air tubes, a very important function is the closure by its depression, of the passage from the pharynx to the cavity of the mouth in the production of the nasal vowels so plentiful in the German and French languages, and the resonants *m*, *n* and *ng*. As the soft palate when at rest hangs down before the posterior opening of the mouth like a valve till it touches the dorsum of the tongue, we have the necessary provision for the isolation of the mouth, but as such nasal sounds occur only occasionally in speech, and since in speech, the soft palate is generally raised to effect the closure of the nasal cavity, so when the mouth is to be isolated for the production of a single sound, the soft palate must be drawn down by some special muscular action into the position which it assumes when at rest.

It will be well for us now to study the structure of this valve-like portion of the palate. We obtain an idea that is sufficiently accurate if we regard the soft palate as an apparatus consisting of two loop muscles, the apices of the two loops being connected. The contraction of one cuts off the cavity of the mouth from the adjacent portion of the pharynx, the contraction of the other cuts off the portion of the pharynx which adjoins the nasal cavity from that which belongs to the cavity of the mouth. The apices of the two loops are connected at the boundary between the cavity

of the mouth and that of the nose, i. e., in the valve-like portion of the palate known as the *velum palati*, or soft palate.

The lower loop muscle is the *palato pharyngeus*, the fixed attachments of which are upon the posterior border of the thyroid cartilage. The thyroid cartilage can only be regarded as a fixed attachment for this muscle in so far as it offers a greater resistance than the muscle which opposes it. From this origin it ascends the sides of the pharynx, curving inward and spreading out to form the inferior surface of the lower portion or free edge of the soft palate. The upper loop-like constrictor muscle is the *levator palati*. It arises on either side from the petrous portion of the temporal bone, and from the adjoining margin of the eustachian tube. As it descends it expands, forming a large part of the upper surface of the lower portion or free edge of the soft palate. The action of this muscle is strengthened by that of the *azygos uvulae levator uvulae*. This muscle arises from the posterior border of the hard palate and passes back to the apex of the uvulae. When in action it helps to raise the posterior portion of the soft palate. In addition to these two elevators, a third muscle enters the soft palate from above in which the character of an elevating loop is curiously modified. This muscle, the *tensor palati*, arises at the outer side of the levator palati from the scaphoid forsa of the internal pterygoid plate and from the contiguous margin of the eustachian tube. In descending it winds around the hooked hamular process of the internal pterygoid plate with its tendinous portion and enters the soft palate from the side, its fibers here spreading out to form, with those of the other side, a tendinous plate or aponeurosis, the anterior margin of which is attached to the posterior margin of the hard palate. When the two *tensor palati* act simultaneously, the aponeurosis is pulled obliquely and so forms a continuation of the arch of the hard palate in the direction of the posterior wall of the pharynx. A horizontal wall of division is thus to a certain extent created between that portion of the nose and the cavity of the mouth adjoining the pharynx and the most important part of the closure of the nasal cavity to the current of air effected only a proportionately small gap being left between the posterior wall of the pharynx and the upper portion of the soft palate now stretched to a horizontal position. The gap is closed by the lower portion of the soft palate being drawn up by the *levator palati* and *levator uvulae* muscles. An

arch is thus formed upward and backward resting against the posterior wall of the pharynx.

There are in the human organism several such valves, so arranged that, under certain conditions, they close an otherwise open passage. The principle is the same in all, for each consists of an arched plate or lip, which when effecting the closure does not touch the opposite side with its free edge only, but with a considerable extent of its convex surface. The advantage of this arrangement is that the greater the pressure upon the concave side of the arch, the more perfect will be the contact, provided, of course, that the valve cannot go back too far, which in every case we find from some special provision, to be impossible. The valves in the cavities of the heart and in the veins are provided with an exceedingly simple check, the principle of which is precisely the same as that of the soft palate.

It has been repeatedly demonstrated that during the production of all purely oral sounds, whether vowels or consonants, the nasal cavity is entirely shut off from the expiratory current of air. This is accomplished entirely by the valve-like action of the soft palate, except in so far as the superior constrictor of the pharynx, during contraction, forms a protuberance upon its posterior wall, opposite the nasal cavity, against which the convex surface of the soft palate is drawn, giving a more substantial contact of parts.

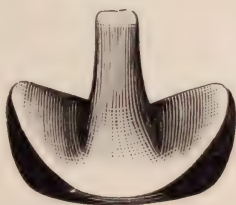
The only nasal sounds which are employed in ordinary speech in the English language, are the resonants *m* and *n*, so we see that the nasal cavity is little used in speech except as it reinforces by its resonance, the oral sounds.

With an understanding of the means by which, in the normal condition, the expiratory current of air is directed into the oral or nasal cavity as the purpose demands, it is most evident that, with the fissured or cleft palate there are not the conditions requisite to the proper performance of the functions of the muscles. In the normal condition each of the series of loop muscles depends upon the resistance or tension of the associated muscles for its proper action. In short, the division of the loops at the apices destroys the whole mechanism. Neither the *palato pharyngeus*, the *levator palati*, nor the *tensor palati* can functionate properly in the cleft condition. The *azygos uvulae* when deprived of the resistance afforded by the tension of the other muscles,

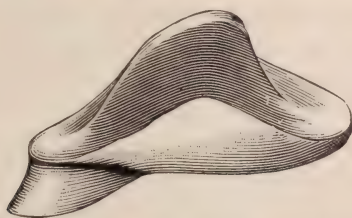
cannot act as normally, but can only draw the fissured uvulæ inward to assist in swallowing. The only muscle concerned in the closure of the nasal cavity from the lower portion of the pharynx that can act normally in the fissured condition, is the superior constrictor of the pharynx, and this can do little of itself. Dr. Kingsley cites the case of a patient with cleft palate who could pronounce the *k* and *g* by throwing the tongue against the protuberance formed by the contraction of the superior constrictor, accomplishing in this way what is normally accomplished by the soft palate bridging the space between these two parts.

By the contraction of the divided loop muscles of the soft palate in the fissured condition, the parts are drawn upward and outward or downward and outward, as the case may be, thus widening the fissure rather than closing it. This action of the muscles will not even help to raise an artificial appliance placed in contact with the parts, on account of their oblique movement. It has been my experience that the action of the deformed muscles cannot be depended upon in the least in connection with an artificial appliance for the formation of pure oral sounds, or any of these sounds which depend upon the valve-like closing of the nasal portion of the pharynx for their proper formation. Inasmuch as the oral sounds predominate in speech to such an extent that the nasal cavity is only occasionally used directly in the formation of articulate sound, and as in the condition known as cleft palate, the speech has the nasal twang to such a disagreeable extent, and as the deformed muscles cannot be utilized for the operation of an artificial valve, I have felt justified in treating these cases in endeavoring to give the artificial apparatus such a form as to effectively close the cleft of the palate and the passage from the oral portion of the pharynx to the nasal cavity. An appliance of this kind is much less complicated than one which has been intended to operate in connection with the deformed muscles. After the involuntary contraction of the muscles has been overcome sufficiently to be able to take an impression of the parts entirely back to the posterior wall of the pharynx, it is a simple matter to construct an obturator, as this would be properly called, that will effectually close this passage, giving to the patient the power to form the oral sounds without the nasal twang characteristic of the cleft condition. With such an appliance the nasal sounds, the *m* and *n*, are necessarily crippled.

The attempt to form these sounds will have the peculiarity of these sounds formed by a person suffering from an obstruction of the nasal cavity by catarrh or ordinary cold in the head. This defect, however, being incomparably the lesser of the two, I have derived considerable satisfaction from the treatment of cases of cleft palate in this manner. I have found that even this faulty formation of the nasal sounds disappears to a considerable extent after the appliance has been worn for a short time. This I account for by supposing that, in taking the impression, the superior constrictor



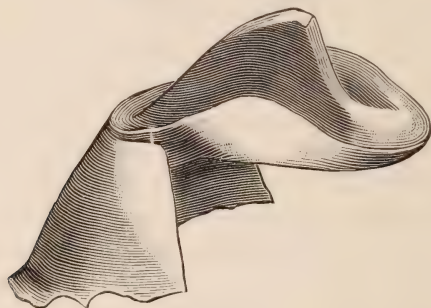
of the pharynx has contracted involuntarily because of the contact of the impression material, so that in the model from this impression the protuberance formed by the contraction of this muscle is shown. By placing an appliance made to this model in position we may suppose that the superior constrictor is excited to unnatural contractions, but that, after the appliance has been in position a short time, the irritability is overcome and a slight space is left for the passage of air during ordinary breathing and for the formation of nasal sounds. At first the patient is



unable to breath with the lips closed, but in a short time they are able to create an aperture for the current of air through the nasal cavity.

My method of procedure has been, to first obtain an impression of the roof of the mouth, of the teeth if in place, and of the edges of the cleft for a short distance. This is easily done by ordinary methods. I construct a plate with a tongue, preferably pliable, extending into the space between the edges of the cleft,

but not in contact with them. Upon this tongue I form heated pure rubber, which can be had in the form of thin tissue, extending it outward and backward from day to day until the involuntary contraction of the muscles has been overcome and the parts can be handled at random. An impression can now be taken extending back to the posterior wall of the pharynx and laterally to the other walls. A simple means of obtaining this impression without giving serious discomfort to the patient by the impression material passing too far into the nose and down the pharynx, is by enclosing the proper amount of soft plaster in a piece of very thin rubber dam, the edges of which are drawn together and tied around a suitable handle. A plate that has been previously made of the proper form for carrying a palatal appliance being placed in position, the plaster enclosed by the rubber dam is carried



back into the pharynx and pressed upward and laterally in such a manner as to take an impression of the parts in all directions, the impression material about the handle forming against the plate in the mouth and the rubber dam preventing the plaster from passing beyond the proper limits, but not preventing a good impression being obtained.

The form of the soft or hard rubber appliance which is made to the model from this impression, and which is attached in some manner to the retaining plate, must depend upon the conformation of the deformed parts. It is my practice to fill the pharyngeal space in the model with melted wax, and after cooling, carve to what I consider the proper form, giving a septum above that will be in contact with the parts in that direction, cutting away the material on each side of this septum to give air passage, forming the inferior surface to give an easy curve backward to the pos-

terior wall of the pharynx, and forming the lateral edges of this lower portion so that the edges of the cleft palate will be in easy contact with them in their movements.

This I consider a most simple yet most accurate method of supplying the pharyngeal valve to patients suffering its absence. I do not claim any originality in this method of procedure. It is simply what has been done to secure results without following exclusively any previously advanced method.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

Regular meeting, June 2, 1891, Dr. D. M. Cattell, President, in the chair.

Dr. W. B. Ames read a paper on "Apparatus for Cleft Palate."

Dr. C. S. Case, of Jackson, Michigan, in opening the discussion said: At the meeting of the Illinois State Dental Society, at Quincy two years ago, Dr. Ames was down for a paper upon this same subject, as doubtless many of you will remember; but the paper was not presented, although fully prepared, for the reason—he averred—that he was not fully prepared to endorse all its statements. This conclusion I feared at the time was largely due to a conversation which I had with him previous to the call for this paper, in which I related some of my successes with the use of soft rubber palates. As I understand it, the very admirable paper we have just listened to, is the one that was prepared for that meeting, and I am glad that this society and the profession has at last the opportunity to be benefited by his experience in this field of dentistry.

A number of his ideas are certainly new and very ingenious, and so far as I am able to judge of their merits. I presume instances will often arise in which they will be very useful.

The principal portion of the paper consists of an elaborate and instructive description of the functions of the muscles of the palate, tongue and pharynx in the normal condition and their individual action in vocal articulation. While this may be interesting as a study it seems to me that it has very little to do with the subject. In the one instance the muscles are permitted by nature to normally develop; in the other—that of congenital cleft of the palate—

an entirely different condition arises: here the muscles are obstructed in development and changed in physical proportions, action and functions. They are mainly occupied in preventing sound from passing through the nares, and those which are used for the production of vocal sounds are so handicapped by their condition that it is very doubtful if they arrive at any thing like the normal condition or possibilities. Therefore an argument which has special reference to the muscles in the normal state, has not the same force with reference to the actual condition of the muscles in a case of congenital cleft of the palate.

To one who contemplates restoration by artificial means, the question is not what the muscles might have been had there been no cleft, but what they *are*, and what they may be able to do in conjunction with and in the management of an artificial appliance. Here there will be found a great variety of conditions and degrees of development, no two of which are alike, each requiring some special feature in the appliance in order to arrive at the most perfect result attainable for the particular case.

The main point of the paper is that the muscles, in any condition, are of little or no use as an aid to an artificial appliance in the production of vocal articulation; the main if not the only object being to so construct the artificial appliance that it will in itself so completely fill the passage to the nares that sound cannot escape by it, although as Dr. Ames says, a space opening will ultimately occur at the posterior wall of the pharynx, which I presume will be opened and closed by the superior pharyngeal muscle.

Whatever value there may be in this mode of procedure I am not prepared to say, never having tried it, nor do I believe that any one with a limited experience is capable of saying. I hope however that it will be proven of practical application because of its simplicity and ease of construction.

His statement that the palatal muscles are of little use in conjunction with an artificial appliance, I am prepared to say is not true. Further I will undertake to promise to bring before this body a patient with an extensive cleft of the palate, who has worn a soft rubber velum for ten years—commencing at the age of 13—who will speak to you so perfectly that none who are unprepared for the event will discover the slightest defect in tone or distinct and perfect articulation.

The reason why all do not acquire the same degree of perfec-

tion when the appliance is perfectly constructed (though most unhappily this is rare) is because it is inserted so late in life that the muscles have acquired certain habits in action which it is impossible for them to overcome and turn to proper usefulness in working the artificial palate; although in nearly every instance incalculable advantage may be derived from a properly constructed soft rubber palate.

If the appliance can be inserted as early as 12 æt. (or even earlier) and changed from time to time during growth, so that the muscles during development will acquire the proper action and function to make the best use of the artificial palate. I believe that we can always predict ultimate perfection of vocal articulation.

Only a few days ago a little girl, 9 æt., with a cleft of the palate was brought to me from Tiffin, Ohio. A cousin of hers, a gentleman 28 æt., with an extensive cleft of the palate also came. He was very skeptical in regard to what could be done because he had repeatedly tried the skill of different operators with no material advantage. A surgical operation early in life had succeeded in perfectly closing the cleft in the soft palate, making the construction of artificial palates which different ones had made for him far more difficult—where any attempt was made to do more than close the opening in the hard palate.

This I saw at once would be absolutely necessary, before any approach to perfect tone or articulation could be obtained, because the soft palate could not reach within three-quarters of an inch of the posterior wall of the pharynx.

Right here is where many skillful surgeons who perform the operation of staphylorraphy later than early infancy make a great mistake. Even though they succeed in perfectly uniting the parts, the undeveloped state of the velum-palati cannot be made to close the naso-pharyngeal opening, with a result that is worse than failure because it prevents opportunities for restoration by artificial means.

As I said before, the gentleman and also the parents of the little girl were very skeptical, but had come to me as a dernier ressort, not wishing to leave any means untried to benefit their daughter. I sent for the young man to whom I have previously referred, and after an extended conversation and examination of his mouth and appliance they were completely cured of their skepticism with the result that I now have appointments for the construction of two

artificial appliances, to be commenced soon after I return.

By the way, I saw a beautiful result to-day of an operation at the hands of Dr. Brophy, upon a little babe, where the cleft had been entirely closed, or nearly so, with the exception of a slight place in the velum palati; and I wish it were possible that all children when they are born could be taken to a competent surgeon and the proper operation performed, without leaving them until advanced in life, when they are obliged to wear an artificial palate.

DR. T. W. BROPHY: I am very glad the Chicago Dental Society has had the pleasure and satisfaction of having this subject presented to it for consideration and discussion, and having a paper as elaborately prepared as the one we have listened to this evening.

I have given the subject of cleft palate considerable thought, and the more I think of it and the more I study it, the more I am satisfied that a defect in articulation is due to a great extent to defective education. I have seen persons whose palates were cleft throughout their entire length, able to articulate quite well, but not distinctly. It is true, a patient thus afflicted is deficient in the implements of speech, and if those who are interested in this subject will take Dr. Kingsley's book and study carefully the action of the muscles, movements of the tongue, use of the lungs and vocal cords in the articulation of sound, you will find the subject intensely interesting.

The etiology of cleft palate is a difficult study. If we take up the causes of the affection and trace them down, we find a study that is very interesting, and the more we study the subject the more we are inclined to the theory of evolution (the Darwinian theory). You have heard such an instance mentioned by Dr. Case, in in the patient upon whom I operated. In the history of that case I find something worth presenting to you to-night, and while not strictly on the subject of obturators, it is on the subject of cleft palate. This is unquestionably a case of heredity, as three children in a family of five have been afflicted with cleft palate and hare lip. The oldest child came to me about four or five years ago for the operation of closing the lip which previously had been operated upon twice. My first operation in consequence of the parents not following directions as to the care of the child proved a failure, but in the second I succeeded in getting good union and a good result. The second child presented a case of double hare lip and cleft palate. I desired to operate on this child when it was about three

weeks old. I made an appointment to meet the family physician at the residence of the patient, and with my assistants went to the depot to take a train to my patient's home. Although it was very warm I was surprised on arriving at the station to find the thermometer stood at 104° in the shade. I telegraphed the doctor that the heat contraindicated an operation and that we would therefore postpone operating until the condition of the weather was more favorable. Three days later the father came to my office, and informed me that the child was dead. If an operation had been performed that day, probably death would have been attributed to it. The case referred to by Dr. Case was the third child in the family, having both a double hare lip and cleft palate. A grandfather of this child on the mother's side was similarly affected. While this is not a positive evidence of congenital or hereditary affection, it indicates that the condition of the grand parent had been transmitted from the mother to the child, although the mother was perfect in this respect. If we had any other affection, as tuberculosis, carried down from grand-parent to grand-child, we would say it was hereditary. Syphilis, we would say, was hereditary if it were handed down from grand-parent to grand-child, and possibly escape the mother and daughter.

If permitted to digress a little, I will briefly state the case of the little child last mentioned. I will state first that the cleft was complete throughout the entire extent of both hard and soft palate. It was an extremely wide cleft. The palatal plates of the maxillary bones were so widely separated I could place my thumb between them. The operation therefore could not be made to close it in the ordinary way. I have for a long time felt that these clefts might be closed in early infancy if proper methods were pursued, and all of the muscles which form the soft palate be brought into use and developed. The absence of use of these muscles leads to atrophy. They are not used, therefore they waste away. We have difficulty if we operate late in life in obtaining good results for want of sufficient tissue. As has been truly said, any operation, no matter how skillfully it may be performed; no matter how complete the union of the parts may be, if we fail to accomplish the object desired, which is to provide the patient with the implements of speech, to make it possible by the use of the palate to close the posterior nares in the articulation of sounds so as to force the air expelled from the lungs through the mouth and prevent it

from passing through the nares our operation will be a failure. Too frequently these operations are made late in life when the union forms a hard almost inflexible band stretched from side to side; such a palate is absolutely useless as it can not perform the palatal functions. An obturator is vastly better in such a case when sufficient tissue cannot be secured to enable the patient to close the posterior nares, as indicated in one of the drawings on the board. While the operation may be a success surgically, in the matter of utility it will be a failure.

The little patient I refer to was only one week old when I first saw her. Being a little too feeble to undergo an operation, I waited a little while until all the organs had become accustomed to and were performing their functions well before operating. When three weeks old the operation was made. In order to close the cleft, the soft palate is closed in the usual manner. The edges of the hard palate are then pared so as to remove sufficient osseous tissue to get a free exudate; the secret of success principally lies, in getting a surface upon which an exudate will freely form. Having done this the cheek is elevated as high as possible with a drill which will make a hole of sufficient size to admit a large wire. I drill through the maxillary bones both anterior and posterior to the malar process, carrying the drill above the hard palate. I introduce large silver wires through the holes made in this manner (illustrating). Having passed the wires through I take a perforated lead button, such as gynecologists employ in operations for closure of ruptures of the perineum, about three-quarters of an inch long, and slip the wires through it in this way (illustrating). The wires are then twisted on both sides by crowding on the cheeks. Having done this, I take a knife, pass it above the wire, and divide both superior maxillary bones, not dividing the soft parts more than is necessary to introduce the knife, but completely dividing the bones. I now tighten up the wires that were passed through the lead button, and the cleft is easily approximated. I then introduce one stitch through the anterior border which is inclined to gape. I have the satisfaction of informing you that the hard palate has united throughout the entire length.

What will be the result of this operation? The muscles will be put into use; the bones are brought together. When the child arrives (if it lives) at an age when it should speak it will not know what it is to utter those guttural sounds which indicate cleft of

the palate. It will have the implements of speech; in other words, it will not be subject to the inconveniences of those people who have cleft palate.

I have diverted somewhat from the paper read this evening, but the subject is so interesting that I cannot help but speak of it now.

The advantages of closing the cleft in early infancy are numerous.

1. The bones may be operated upon this early in life without producing shock to the patient. As demonstrated in this case, very little shock followed. Why? Because the nervous system is not so highly developed as that of an older person, and the impression is not so great.

2. The muscles develop properly by use, the same as the arm develops from use. A man who is accustomed to make use of his muscles in gymnastic exercises is stronger. For instance, the right arm of a blacksmith will measure two and one-half inches more than the left, simply because he swings a heavy hammer. Compare him with the bookkeeper and you will see the difference.

3. The child, when it arrives at the age when it should speak, uses its muscles the same as other children. If allowed to go beyond that period and to articulate as people do who have cleft of the palate, the child would not know how to use his palate even though a good one might be secured by an operation. He would have to be taught how to use it. He would have to go through a system of training, and it requires months of constant training to accomplish what we desire. You might as well expect a young lady to play correctly on a piano by giving her one lesson; she must be taught *how* to play. So with the obturator, its successful use is a matter of education.

These reasons are good why the operation should be made early, before the child knows how to use the palate at all.

Another reason. I have never yet seen an adult, a patient, who had a cleft who did not have chronic pharyngitis. The cold and heat coming in contact with the membrane, it takes on inflammation, and we have as a result pharyngitis. But the value of the obturator can never be estimated when properly constructed and the patient properly trained. I know that every gentleman who has had experience upon this subject has been chagrined at the bad results of such an appliance. Dr. Kingsley has told me his experience, how awkward it was to put a patient under training and then have him go away and neglect everything he had told him

instead of carrying out his instructions. If you study the movements of your lips and cheeks, and as far as possible the muscles of the pharynx, you will be astonished to see what you are inadvertently doing. The issuing of sound over the curve of the tongue, and the function of the teeth in the action of speech, is a study that is intensely interesting.

I am highly pleased with the results in the case I have reported. So far as I know it is the first operation of the kind ever made. I have conversed with my professional friends, and they do not know of the operation ever having been performed before. In conclusion let me say that in my opinion these distressing deformities may by this procedure be treated successfully in nearly all cases.

DR. A. W. HARLAN : I am very much interested in the subject, and I only regret that, after listening to the paper, this body of dentists should not be told a little more particularly how to produce, manufacture or fabricate apparatus for cleft palate. That is what they need, and that is what will be valuable for them. Theoretically I can construct an obturator just as well as anybody else ; practically I do not do it, because I prefer to send cases of this kind to one who thoroughly understands them and is in the habit of making apparatus for the cure of palatine defects from a mechanical standpoint. In a study of the subject I have come to the following conclusions :

1. If there is a palatine defect the best thing to do is to make an operation early to get development of the muscles.
2. There is no use in making an operation late in life, for the simple reason that the nasal sounds are not cured, and frequently the patient is not benefited.
3. How can an every day, ordinary, working dentist, who *does* make rubber and gold plates, go to work and make an apparatus to adapt itself to the ordinary case? I am astonished that Dr. Case when he was on the floor did not tell us how to do this. It is as easy to tell that as it is *how* to fill teeth, because you have to picture it in your mind's eye. Even the essayist, while he entered into it partially, did not do it with that clearness and minuteness of detail that would enable the young and old men of the profession to go to work and construct an appliance that will mechanically close the cleft and make the patient speak well. I would like to have the gentlemen tell us how to do that. That is what we want.

DR. C. S. CASE : The latter part of next week I will be giving instructions at the college in regard to making soft rubber palates. I would like to say further that had I all my appliances and models here, I think it would be difficult to make the matter as plain to you as Dr. Harlan thinks it is possible for a man to do in the few minutes allotted us in the discussion of this subject.

There are some features which Dr. Ames has brought out this evening, where it should be far easier for dentists to close the cleft by his method and perhaps arrive at a favorable result than it has been for others, myself among the rest, who have done it in a more complicated manner.

DR. J. N. CROUSE : I agree with Dr. Harlan, and I will go further and say that the subject of cleft palate is not a suitable one for discussion in a society that meets once a month. I would not give much for anything that has been said on the subject other than the matter pertaining to articulate sounds. I have heard Dr. Kingsley speak of that, and it surprised me. He said it was a matter of education.

DR. W. B. AMES : In closing the discussion said, in regard to giving a description of how to make obturators, I did not consider that it was necessary to enter into that to any greater extent than I did.

The virtue of the particular method I have advocated is that it is a simple way of getting at it. By the method I have outlined he is bound to talk better; he cannot help himself. As soon as the apparatus is placed in the mouth there is no nasal twang, the apparatus changes that entirely.

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THE ABUSE OF DENTAL CHARITY.

In an editorial from the *Medical Record* of June 27, 1891, this subject is referred to as one of the menacing evils, threatening the dental profession. Attention is called to the fact that at one time when a similar condition existed in the medical profession, the dentists should have been on the alert and prevented the evil staring them in the face. It is said that the establishment of free medical dispensaries and so-called private hospitals is the cause of a diminution in the practice of many medical men. In the localities where the poor reside, a physician often can barely exist. But it is not only the poor (many of whom are rich enough) but the middle classes and even the well-to-do patronize these dispensaries and thus injure the medical practitioner. The condition is identical with the condition now existing in the dental profession in large cities. We quite fully realize the difficulties attending the contradictory condition, which compels a college to educate its students, to give them clinical material, which of necessity must come from the very multitude among whom the future graduate may practice.

The colleges should formulate some plan whereby only the needy should receive free services at dental infirmaries. It might not be out of place for the National Association of Dental Faculties to take hold of this matter. If they do it at all, they should act in the matter before they arouse the wrath of a much larger number of their students. The graduates of to-day are the leading men of to-morrow.

WORLD'S DENTAL CONGRESS, 1893.

Those who are in a position to observe the activity displayed by everybody who has any connection with the World's Fair of 1893, can entertain no doubt whatever regarding the success of the enterprise. Not only is this true as far as the grounds, buildings and displays are concerned, but also of the proposed congregations of men in the multitudinous walks of life. Conventions and congresses without number will be held. There is no question at all that the meeting of the World's Dental Congress will bring together the leading dentists of the world. The occasion will be a memorable one in the annals of dental history. And it is exceedingly gratifying to know that the success of that meeting is already assured. Many at home and abroad are laying their plans to be here; hardly a letter comes without the expression, "We will be on hand in '93." The preparations regarding the dental meeting are progressing as rapidly as can be expected for such an undertaking. Chicago dentists are as a unit in the desire to give the most hearty welcome to all who will visit the Congress.

THE DESTRUCTION AND REMOVAL OF THE DENTAL PULP.

In *The Pacific Dental Journal* for July, 1891, is a paper by B. S. Scott, D. D. S., entitled, "Monograph on the Dental Pulp." This was read before the Washington State Dental Society, May, 1891. It was called into existence by the following series of questions that were sent out by the author to prominent members of the dental profession:

1. When necessary to devitalize pulps, what medicines do you use to effect the purpose?
2. What means do you take to allay inflammation of pulps preparatory to devitalizing?
3. In what proportion of cases do you find destruction of pulps exceedingly painful to the patient?
4. What remedies do you use to counteract the pain incident upon the irritation of the pulp tissue by agents for its destruction?
5. What condition of the pulp will permit the devitalizing with the least pain?
6. What length of time is usually required to produce death so that extirpation can be proceeded with?

7. What methods and means do you use to avoid the pain produced by the extraction of the devitalized tissue from the roots?

We will only take up that portion of the author's questions with reference to the destruction and removal of the dental pulp, and quote a few of the answers of various college professors in relation to this matter.

Dr. James Truman says: "To effect the devitalization of the pulp, I know of but one agent that will certainly accomplish it—arsenious acid. Iodoform has in the past been recommended by several German dentists for this purpose, but this effort is doubtful in view of the peculiar properties of the drug."

In answer to the question, "What methods and means do you use to avoid the pain produced by the extraction of the devitalized tissue from the roots?" Dr. Truman says, "I have no methods to avoid the pain. The nerves still remaining at the upper third of the canal are in a partially paralyzed condition, and the suffering caused by the removal is not great. This is better than to take the risk, which complete devitalization brings, of arsenical pericementitis, a very serious condition and by all means to be avoided. I question the value of any agent used for the reduction of pain in this highly irritated tissue."

Dr. Ira B. Crissman, of Chicago, says: "White oxide of arsenic triturated very fine; add small amount of hydrochlorate of cocaine crystals; arsenic, $\frac{7}{8}$; cocaine, $\frac{1}{8}$; make into paste by adding creosote; place in shallow porcelain dish with wide mouth; then ready for use.

"After removing the arsenic I thrust a broach alongside the pulp, freeing it of gas or excess of blood that might be present; then apply tannin in solution with glycerine or alcohol; this removes the sensation by contracting the pulp fibers, thereby hardening the pulp. No trouble in removing it in a whole without the least pain."

Dr. A. H. Fuller says: "I use at present and have for several years the "Nerve Fiber," prepared and sold by the S. S. White D. M. Co. My reasons for preferring this are: (1) It is in convenient form for use; (2) more readily applied to point of exposure than any other; (3) less danger of its being forced into contact with gum tissue, etc.

"For removing the pulp I use pure carbolic acid, and care, taking time for this to have its effect."

DR. THOMAS H. CHANDLER says: "For devitalizing I use the old-fashioned arsenic, morphine and creosote, or preferably carbolic acid. I have found nothing better. If the pulp is dead there will be no pain in removing it."

DR. J. FOSTER FLAGG says: "Arsenic as devitalizing fiber, combined with acetate of morphia and oil of cloves, or antipyrin or campho-phenique. Removes the pulp by flooding pulp cavity and canals with pain obtundents or by 'puncturing' acetate of morphia paste into portions of yet undeveloped pulp tissue."

DR. T. W. BROPHY says: "I use arsenious acid in the following proportion:

R. Morphia,	-	-	-	-	-	grs. xxx.
Arsenious acid,	-	-	-	-	-	grs. x.
Carbolic acid,	-	-	-	-	-	q. s.

For removing the pulp, after removing the arsenious acid, antiseptically cleanse the cavity and apply a little of the following:

K. Tannic acid,	-	-	-	-	-	grs. x.
Glycerine,	-	-	.	-	.	1 drachm.

M.

This application will contract the tissues and render their removal easy."

DR. THOMAS E. WEEKS, says: "I use arsenious acid and tannin, equal parts, mixed to a paste with creosote." To remove the pulp he allows it to rest under a dressing of tannin and oil of cloves for six or seven days after the removal of the paste; then passes a fine barbed broach or extractor to the apex of the root and quickly severs the pulp at that point. If this can be successfully accomplished there will be but little pain.

DR. J. B. LITTIG says: "Arsenic, pure, taking out as much as will fill a spoon excavator; use half by saturating a piece of cotton with a 20 per cent solution of cocaine, and dipping it in the arsenic, apply to the exposed pulp; lay over that one of Dr. Teague's metallic caps, and cover with gutta-percha or oxyphosphate and cotton." He removes the pulp by applying pure carbolic acid.

DR. ISAAC J. WETHERBEE says: "I use arsenic in crystals, hermetically sealing; also creosote, arsenic and morphine acetate, with oil of cloves and chloroform (an arsenite)." He removes the pulp in some cases, where immediate removal is necessary, by giving the patient gas. "When I can have my own time and way I should wait until the tissue had sloughed, especially in molar teeth.

I never allow arsenic to remain in a tooth more than twelve hours, except when I use crystals and hermetically seal."

From the above quotations the intelligent reader of the DENTAL REVIEW will gather that members of the profession differ with reference to the destruction and removal of the pulp as much in these days as in those of former years. The editor of this journal at the Boston dental meeting presented a system for the destruction and removal of the pulp of a tooth mainly for the purpose of preventing future disintegration of the organic portion of the tooth and for the prevention of discoloration of the crown. One of the things that was insisted upon at that time was this, that from the moment when it was decided to destroy the pulp of a tooth and measures were taken to accomplish that object, nothing should be allowed to gain entrance to the pulp chamber or canals of the tooth that was not placed therein by the dentist himself. Long years of practice in this direction have convinced the writer that a certain method for destruction of the pulp must be adopted by every operator to insure uniformly successful results. No scientific data have been presented up to this time by any writer on operative dental surgery or dental medicine to prove that the method therein laid down was incorrect, or was lacking in the essentials necessary to not only destroy the pulp of a tooth in the most thorough manner, but to prevent future destruction of the tubular and other animal contents of a tooth and also to prevent discoloration of the crown. A little more uniformity in the method of pulp destruction and pulp handling after destruction is needed at this time.

The student who would read the various replies by the eminent college professors, whose methods are above presented, would fail unless he adopted a single one to accomplish what was best for himself or for his patient.

At the meeting of the world's convocation of dentists in Chicago, in 1893, it is hoped that a uniform system of destruction of the pulp and its subsequent handling will be presented which will be a guide for the practicing dentist of many decades to follow that meeting. We only present these methods of pulp destruction and pulp removal to show the great diversity of opinion that now exists in our teaching faculties and to emphasize the fact that no practicing dentist should be censured for using methods that may be more or less harmful because he acquired them honestly and in course from his teachers at college.

FOREIGN CORRESPONDENCE.

LETTER FROM LONDON.

6, 7, 8 AND 9, BROAD STREET, GOLDEN SQUARE,

LONDON, JULY 6, 1891.

Dr. J. J. R. Patrick, Belleville, Ills,

DEAR SIR.—The DENTAL REVIEW for June has just come to hand, and I have read your remarks on Dr. Talbot's paper on the "*Scientific Investigation of the Crania and Jaws*" with much interest. It is very amusing to learn from Dr. Talbot that "Dr. Richard Owen, who received a pension from Queen Victoria, resides in the Queen's garden in London." Her Majesty would hardly be so impertinent as to offer a pension to a Fellow of the Royal Society and one of her Knight Commanders of the Order of the Bath, or to offer him a residence in her garden. As a retired civil servant the pension which he receives is his by right, and is in no sense a badge of pauperism. The public office which he held was that of Superintendent of the Natural History Department in the British Museum. As you are doubtless aware, this department has been transferred to a new building at South Kensington, and is now presided over by Professor Flower, a worthy successor to grand old Sir Richard Owen. You will be pleased to learn that Sir Richard is still alive; he has just recovered from an illness, and went out for a drive for the first time after it a few days ago. I enclose a very brief sketch of him from Hazell's Annual for 1889. Please excuse me troubling you with these details, but as an admirer of the great comparative anatomist in common with yourself, but unfortunately quite wanting in your ability to follow and appreciate his writings, through lack of education, I thought you might like to receive them. Some years ago my friend, Mr. Sykes, presented me with several of your pamphlets, which I read with much pleasure.

Yours faithfully,

J. HIGSON.

RICHARD OWEN, K. C. B., F. R. S.

Sir Richard Owen, the veteran comparative anatomist, was born at Lancaster in 1804. He was educated at the Lancaster Grammar School and the Medical Schools of Edinburg University and Paris. After being in practice for a short time as a surgeon in Lon-

don, he became, through the influence of Dr. Abernethy, assistant curator of the Hunterian Museum. In 1834 he was appointed Professor of Comparative Anatomy at St. Bartholomew's Hospital (London); in 1836, first Hunterian Professor in the same subject at the Royal College of Surgeons, and in 1856 Superintendent of the Natural History Department in the British Museum.

Professor Owen, from the examination in 1839 of a fossil bone sent to him from New Zealand, propounded a theory of the existence in remote ages of a bird more gigantic than the ostrich; and the accuracy of his theory was subsequently, by the discovery of the whole fossil, established beyond doubt. This led him to the adoption of his famous theory of the extinction of species. He is a voluminous writer on the subject to which his scientific researches have been successfully devoted. He is an honorary graduate of several universities, a corresponding member of various scientific associations, and in recognition of his eminent services, was created a Knight Comander of the Order of the Bath (K. C. B.), in 1873.—*Hazell's Annual* for 1889.

DENTAL COLLEGE COMMENCEMENTS.

BOSTON DENTAL COLLEGE.

The twenty-third annual commencement exercises of the Boston Dental College was held at Berkeley Temple on Wednesday, June 17, 1891, at 7:30 o'clock, P. M. An address was delivered by Rev. E. L. Rexford; the valedictory by Geo. A. Thatcher, D. D. S. Number of matriculates, 96. The degree of Doctor of Dental Surgery was conferred on the following (31) members of the class of 1891, by the President of the college, I. J. Wetherbee, D. D. S.

Barbour, Fred W., St. John, N. B.
 Belyea, Frederick S., Boston.
 Chandler, John B., Boston.
 Emerson, John W., Roxberry.
 Ferry, Edmund J., Boston.
 Follett, Frank E., Belfast, M. E.
 French, William E., Everett.
 Gallup, Jennie H., Bristol, R. I.
 Hoadley, True A., Woodstock, Vt.
 Hoeg, Kristian H. E., Providence, R. I.
 Johnston, Frank B., Somerville.
 Lacaille, Charles W., Lawrence.
 Lesure, William A., Upton.
 Luttropp, Knut J., Roslindale.
 Lyons, Frederic W., Boston.
 McGovern, Joseph T., Dorchester.

Nickerson, William E., New York.
 Peake, Ernest P., So. Africa.
 Pease, Oliver, Amherst.
 Peirce, Walter N., Pittsfield, N. H.
 Pray, Mark W., Boston.
 Scott, John S., Shepperd, N. B.
 Shatswell, Henry K., Ipswich.
 Thatcher, George A., Brockton.
 Thornton, Benjamin N., Boston.
 Vinton, Sherman E., Providence, R. I.
 Walker, Seaph J., Bridgton, Me.
 Wall, Clarence H., Ashland, Mass.
 Wood, Edwin D., Frederickton, N. B.
 Woodman, Austin W., Ashland, N. H.
 Woodward, Marion L., Paris, France.

PRACTICAL NOTES.

RETENTION PLATES.

BY LOUIS OTTOFY, CHICAGO.

For the retention of loose teeth, either due to the inflammation consequent on periosteal disease, the destruction of the alveolus due to pyorrhœa alveolaris or salivary calculus, or for securing the immobility of implanted or transplanted teeth, a cap, covering the tips of the teeth is often preferable to banding or wiring. In fact, it has been my experience that bands are especially unpleasant, and in most cases impossible of proper adjustment, if the band is made to fit the tooth snugly it must be cemented to near the cutting edge, if it is made loosely it will slip down toward the gum and thus cause endless annoyance. In the case of implanted or transplanted teeth, their removal is attended with danger to the comparatively loose tooth. I have therefore used caps made first of 22 K. gold, later of gold and platinum, and until recently of platinum. While no special objection can be raised to either of these materials, they are expensive, and inasmuch as they are generally lost or mislaid by the patient, it causes an unnecessary loss. I have found German silver, so much used now in making regulating appliances, an admirable substitute. It is cheap, equally as flexible and yet sufficiently strong to make a good splint. No. 33 is sufficiently strong, can be readily stuck up with the Mellotte molds, trimmed, cemented and burnished into place, and answers the purpose in every particular.

CAPPING EXPOSED PULPS.*

BY DR. J. O. BROWN, CHICAGO.

There are a great diversity of opinions, or at least there have been, as to the most successful manner of performing the very delicate operation of capping exposed pulps.

In the earlier days of dentistry our fathers in the profession used to take a small piece of gold and so bend it as to form a cup shape, which they would place over the exposed pulp with the concaved side next the exposure.

But then there were a number of reasons why this method was not always conducive of satisfactory results.

* Read before the Hayden Dental Society, of Chicago, May, 1891.

The main reasons were that it was almost impossible to get a perfect fitting cap, for it would either press upon the pulp and cause pain, or there would be a vacuum and the consequent accumulation of either gas or cerum and the pressure would again exist and irritation, followed eventually by the congestion of the membrane, and strangulation of the pulp, and very often in those days of primitive dental science, would result in the loss of the tooth.

Later on came the oxychloride, oxyphosphate, gutta-percha and finally the chlora-percha in their turn.

The oxychloride of zinc was not as successful as it might have been owing to the amount of heat that it created.

The oxyphosphate in hardening forms crystals and in my opinion it is the crystals coming in contact with odontoblasts which causes the paroxysms of pain which follows introduction of a phosphate capping.

Chlora-percha has not been very successful in my hands when used as a capping.

My method of treatment and capping is in part original with me. When I find an exposed pulp I first remove all the foreign matter from the cavity and as much of the decay as is consistent at the time.

I then wash out the cavity with 95 per cent carbolic acid, then I use a dressing of oil of eucalyptus which I usually change once or twice at the first sitting and leave a small piece of absorbent cotton wet with the oil, in the cavity.

I have the patient return each day for treatment as long as it is necessary.

When the congestion has disappeared and the tooth is ready for filling I apply the dam and dry the cavity with cotton, after which I remove all the carious dentine necessary, and sterilize with 95 per cent carbolic acid, for two purposes: 1st, for the purpose of sterilization; 2d, that the acid may form a coating over the exposed pulp.

Then dry the cavity as thoroughly as possible.

Now I am ready for the capping. I take a piece of clean white blotting paper and cut to fit the floor of the cavity as nearly as possible.

I then rub it between the thumb and finger to soften it up thoroughly, after which I split it and thoroughly carbolize one

half of it which I place on a napkin, where all of the surplus acid is absorbed.

Then I place the carbolized paper in the bottom of the cavity and press it to place with an instrument, after which I fill the cavity with cement of a consistency that will allow it to flow and leave it set for about ten minutes.

I then remove the dam and give the patient a respite of from ten days to two weeks, when I remove a sufficient quantity of the cement and refill with gold.

If the metallic filling is to be amalgam I very frequently finish the operation before removing the dam.

With this method carefully followed out I think I have had the best of results.

In the last four years when I have used this kind of a capping I have never had any bad results; if there were any, the patients did not return to me for further treatment, and now I use it exclusively.

MEMORANDA.

Dr. A. W. Harlan is in Europe.

Dr. J. W. Crane is in the United States.

Dr. J. W. Wassall sailed for Europe August 1.

Dr. W. B. Ames, of Chicago, has gone abroad.

Dr. W. B. Ames will visit the B. D. A. this month.

Niagara Falls was selected as the next place of meeting.

Dr. J. B. Willmott, of Toronto, was one of the visitors at the A. D. A. meeting.

Billheads are coming to hand daily, all in good taste, too. This is encouraging.

Dr. C. F. W. Bödecker, of New York City, was a recent visitor to the World's Fair City.

Dr. G. C. Daboll, of Paris, France, was one of the visitors at the late meeting of the A. D. A.

The Virginia State Dental Association meets at the Hygiea Hotel, Fortress Monroe, August 18, 1891.

The Chicago College of Dental Surgery has removed to the corner of Michigan ave. and Randolph st.

There was a good attendance at the late meeting of the A. D. A. at Saratoga, about one hundred and fifty being present.

Have you tried Aquozone? It is used in place of peroxide of hydrogen for working pus cavities. It seems to act well.

Dr. Francis M. Baab, a New York dentist, has died from the bite of a young woman upon whose teeth he was operating.

In a recent advertisement we learn that a dentist uses "Nitrous oxidizes, chloroform and ether," and no charge for consultation!!

For the first time in the history of the A. D. A., the face of the venerable Dr. Atkinson, was absent in flesh, but present in the hearts of everybody.

Dr. Corydon Palmer, of Warren, Ohio, presented the American Dental Association, at its late meeting with a splendid likeness, in oil, of the late Dr. Atkinson.

Dobisch recommends the following local anæsthetic, to be applied for about one minute by means of a camel's hair brush: Chloroform, 16, o.; ether 15, o.; menthol, 1, o.

IT MAKES US SAD.

The dog days have come and we are unable to state that a new dental college has been incorporated in Illinois.

Mrs. Padsby (coming forward at prayer meeting): "My husban' wanted me to explain that he an't laughin' at your remarks. He got his new teeth in upside down an' can't git them reversed till he gits outside."—*Judge*.

Prof. Bardeleben, of Germany, estimates, after twelve years of observation, covering 12,000 cases of chloroform narcosis, that on an average each individual inhales one cubic centimeter of chloroform during every minute of anæsthesia.

Two serious cases of poisoning from cocain in the hands of dentists were recently reported from France. In one case at Lille, the patient died, in the other at Paris, the patient was resuscitated with considerable difficulty by injections of ether.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The following were elected officers for 1891-92: President, L. D. Shepard, Boston, Mass.; Vice-President, W. E. Magill, Erie, Pa.; Secretary-Treasurer, Fred A. Levy, Orange, N. J.

The new editor of *The Texas Dental Journal* is John C. Storey, late president of the Southern Dental Association, and member of the committee having in charge the Dental Congress of '93. We extend a cordial welcome to our esteemed friend into the ranks of dental journalism.

A MAINE FAD.

Bangor (Me.) *News*: "Friendship teeth" is the latest fad. One of the Gardiner shoe-factory girls has been presented with a set of artificial teeth, each of her associates giving a tooth and naming the same.

We are indebted to Dr. T. H. Smith, of Bloomington, Ill., for a set of four hand root trimmers. These instruments, we should think, would be of great service in preparing roots for crowns, etc., and would well pay some manufacturer for the making. The invention of every practical instrument helps the dentist to do better operations on the teeth.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The following were elected officers for 1891-92: President, W. H. Eames, St. Louis; Vice-President, J. D. Patterson, Kansas City; Secretary, J. D. Patterson, Kansas City; Treasurer, H. A. Smith, Cincinnati, O.; Executive Committee, J. Taft, A. O. Hunt and F. Abbott.

UNION DENTAL SOCIETY.

A meeting of the Union Dental Society, formed of the Central Illinois and Western Illinois Dental Societies, will convene in Peoria, Ill., Sept. 8th, 1891, the convention to last two days or until the programme is completed. The Executive Committee in full charge of preparations for this meeting report pledges for an excellent list of papers and clinics. Peoria is easy accessible by numerous railways. Let all attend.

E. K. BLAIR, Secretary.

MINNESOTA DENTAL SOCIETY.

For the ensuing year, the following were elected officers of the Minnesota State Dental Association:

President, W. C. Merrill, Albert Lea; vice-president, C. H. Stearns, Zumbrota; secretary, L. D. Leonard, Minneapolis; treasurer, H. M. Reid, Minneapolis; chairman executive committee, C. A. Vanduzer, St. Paul; master of clinics, F. H. Brimmer, Minneapolis.

AMERICAN DENTAL ASSOCIATION.

The following were elected officers of the American Dental Association for 1891-92: President, W. W. Walker, of New York; First Vice-President, J. D. Patterson, of Kansas City; Second Vice-President, S. C. G. Watkins, of Montclair, N. J.; Recording Secretary, George H. Cushing, of Chicago; Corresponding Secretary, Fred A. Levy, of Orange, N. J.; Treasurer, A. H. Fuller, of St. Louis, Mo.; Members of the Executive Committee, J. N. Crouse, G. W. McElhaney and V. H. Jackson.

NEW HAMPSHIRE DENTISTS.

At a meeting of the Governor and Council, June 9, 1891, Drs. William Jarvis of Claremont; Fred H. Lunt, of Rochester; Edward B. Davis, of Concord, were appointed a Board of Registration in Dentistry. They organized by electing William Jarvis, president and Edward B. Davis, secretary.

The first meeting of the board for the examination of candidates that come under the law will be held at Concord, Sep. 1st and 2d, 1891.

EDWARD B. DAVIS, Secretary.

The Fifteenth annual meeting of the New Hampshire Dental Society was held in Concord, June 16th, 1891. Following are the officers elected for the year ensuing:

President, William R. Blackstone, Manchester; vice president, Clarendon P. Webster, Franklin Falls; treasurer, George A. Young, Concord, secretary, Burton C. Russell, Keene; executive council, J. H. French, Penacook, E. C. Blaisdell, Portsmouth, Edward B. Davis, Concord.

There will be a special meeting of the society at Manchester, Sept. 29, 30 and Oct. 1, 1891.

This is expected to be the largest and best gathering of members of the profession ever held in the State. All dentists in this State are invited to come.

BURTON C. RUSSELL, Secretary.

SCIENTIFIC CRANKS.

Every time we strike a match we are indebted to the men who have studied science for the mere love of it. The men that worked away at coal tar "just to see what was in it" made the whole world their debtors by discovering alizarin, the coloring principle of madder. And to those men the world is indebted also for aniline, antipyrine, and more than 100 other coal tar products. Scientists, wondering what was in crude petroleum, found paraffine and vaseline. Pasteur wondered what caused fomentation. He found out and brought a new era to wine-making. The singing and dancing of the tea-kettle attracted the attention of a brain, and we have as a consequence all the applications of steam. The swinging of a chandelier in an Italian cathedral before the eyes of young Galileo was the beginning of a train of thought that resulted in the invention of the pendulum and through it to the perfecting of the measurement of time, and thus its application and use in navigation, astronomic observations, and in a thousand ways we now pass by unnoted, has been of such practical value that the debt to scientific thought, even in this one instance, can never be known. Science, in its study of abstract truth, is ever giving to man new beginnings. While the devil is engaged in finding mischief for idle hands to do, science is eternally at work finding something useful for them to do.—*Aluminum Age*.

OBITUARY.

E. B. WARD, M. D., D. D. S.

The following resolutions were adopted by the Delta Sigma Delta Fraternity at its last annual meeting held at Lake Geneva, Wisconsin:

Inasmuch as though the workings of Divine Providence, there has been removed from our midst a worthy and beloved brother, E. B. Ward, M. D., D. D. S., who departed this life after a long illness at Richmond, Va., on April 25th, 1891; now therefore be it

Resolved, That in the death of our brother, the dental profession has lost a most worthy member, that the ranks of our order is bereft of one of its most honored lights, and be it further

Resolved, That the Delta Sigma Delta Fraternity hereby tender the most heartfelt of sympathies to his bereaved family and it hereby also orders that the supreme scribe shall send a copy of these resolutions to the various dental journals of the country, and to the bereaved and sorrowing widow.

Done by the supreme chapter of the Delta Sigma Delta Fraternity at its annual meeting at Forest Glen Park, Lake Geneva, July 8, 1891.

LOUIS OTTOFY, Chairman	} Committee.
R. B. TULLER,	
D. W. RUNKLE,	

FRANK OVERHOLSER, D. D. S.

At the home of his father, Dr. D. L. Overholser, at Logansport, Indiana, died on Tuesday morning, July 28, 1891, of consumption, Dr. Frank Overholser, in the twenty-ninth year of his age. Dr. Overholser was a bright young man, a graduate of the Dental Department of Michigan University, class of '83. He enjoyed a lucrative practice, was one of the prominent young men of the profession in Indiana. He had been married seven years, and the fruit of that union, a daughter, Helen, preceded the father in death on April 16, 1891.

The profession, in which he promised to take such a prominent part, will learn with sincere regrets of his demise. The DENTAL REVIEW extends to the sorrowing widow bereft of her husband and daughter, the most deep and heartfelt sympathy in her hour of grief and anguish.

IN MEMORIAM.

MEMORIAL TRIBUTE TO DR. W. H. ATKINSON.

BY DR. W. F. MORRILL, NEW ALBANY, IND.

The passing away of Dr. W. H. Atkinson from the dental world was like obliterating a full-orbed planet from the starry firmament. For more than a third of a century he shone with resplendent luster, and by his death a bright light was extinguished. There was but one Dr. Atkinson, so peculiar his maket up and composition. No one who ever saw him, ever looked into his deep blue eyes, but would discover he possessed rare gifts. He was rich in knowledge, opulent of speech, and with deft fingers could operate with skill. He was desperately in love with the art and science of dentistry, to which he gave his ambition, energy and life-long devotion. He had the capacity, the comprehension, the adaptation and the ready grasp to equip himself as master, teacher, and a conspicuous practitioner. In the arena of debates, before dental societies, he showed fullness and preparation. Nature had been kind to him; had endowed him with wit and large intelligence, so that he saw readily the points of debate, and often with the effectiveness of a gattling gun he could discharge a volley of eloquence, and by this felicity of inspiration climb the heights of the sublime. His temperament was affectionate, warm and tender as a woman's. His arms were all-embracing. His house and office on Ninth street, New York City, was the Mecca whither we all went to get helped and healed. None came away without benefit. All were invited to the inner temple, welcomed to the feast of good things and a royal hospitality. He spared no efforts nor expense to furnish his dental friends opportunities to see cases and operations uncommon in their character and to explain in minutia the treatment of the same. Not only was this obliging courtesy prominent among his good traits, but toward his patients in the chair he was a marvel of politeness and tact. I recall an instance of a young lady whom I saw there about ready to take the chair but manifested some hesitancy to do so. His blandishments of speech and dash of pleasantries put the patient beyond fear sand made ready consent without delay. To have this superb accomplishment, to disarm one of the terrors of dental operations, was to be envied.

Perhaps the crowning characteristic of our friend, Dr. Atkinson, was his princely generosity. He was too noble and large-hearted to live free and independent from annoyances. His self-sacrificing spirit was so great, his soul was so athirst to seek and impart knowledge, to place dentistry upon a higher plane, to make it more and more respected by exalted worth, that his pecuniary resources were never commensurate with his liberality.

A most valuable member of numerous dental societies, Dr. Atkinson, was a never-failing attendant of the American Dental Association to which he contributed to make it a success as a dignified, representative body. Were his contributions to dental literature blotted out the pages would indeed be barren. To the special branches of microscopic histology he was a profound student and an industrious investigator. His sympathies, aspirations and impulses were to throw light and to bring success to dental operations. In opinions which he entertained with honest difference toward others in the same field of thought, he was respectful and courteous. In his writings and public utterances he was at times technical, not easy to be understood, yet there is always enough in them to have a potential influence to keep alive his fame beyond this fleeting present. He inspired others to better methods of dental practice. He spent years in profound study before success came and often accounted failure precious as the former. The ingenious instruments, the first mallet and plugging set, he devised are still held in esteem by many operators. As poets spend days over a line, as Stradivarius spent days over a tiny block to go into a violin, as great architects of the past lavish exquisite work on hidden nooks, so did Dr. Atkinson expend thought and labor on the inner surfaces, outer angles, edges, walls, and contour formations of natural teeth that they might be preserved from the ravages of decay and restored to pristine beauty. Some may murmur at the large fees he asked for his services; but who can estimate a cartoon by Raphael or a operation by Atkinson? Both were consummate artists. His fame is not bounded by our continent, it extends beyond the seas.

Mr. President, when I look back over my personal acquaintance with our venerated friend whom we this day pay memorial tribute and recall not only his abilities and achievements, my mind's eye also reverts to that galaxy of associates who were engaged with him in those endeavors and efforts to advance us in the line of progress and true development. True, some with their shining faces and beautiful records have joined our friend in "the starry court of eternity," while others with their armor on are marching to the consummation of the work inaugurated, adding still other recruits, to fill the nich, and thus amazing us with the beneficent ordering of nature.

How will his life and labors have earned the respect which is his due, I need not enlarge; his monument is built by his own hands; his eulogy is his life; and his epitaph our grief. As we think of the mortal part of our friend and brother moldering in kindred dust, the priceless heritage of good deeds, the inspiration of his words and example, will remain to make us and the world better and happier. And his "sweet memory to-day falls on us like a reclining sun, tenderly, yet sadly."

THE
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No. 9.

ORIGINAL COMMUNICATIONS.

ART *versus* NATURE IN THE FORM OF CONTOURS.

BY C. N. JOHNSON, L. D. S., D. D. S., CHICAGO.

Much has been spoken and written on the subject of the proper contour to be given fillings on the proximate surfaces of the teeth. The evil effects of flat fillings are so apparent and have so often been emphasized that they need not be repeated in detail in this paper. I merely wish to state at the outset that I am emphatically opposed to them, lest my subsequent criticism of certain forms of contouring be misconstrued into an advocacy of flat fillings.

It has seemed to me that the true principle which should govern us in the form to be given fillings has in many cases been overlooked or ignored. We have been constantly taught to reproduce the natural form of the tooth with filling material instead of being taught to produce the best form. This statement carries with it the intimation that the natural form is not always the best, at least when lost tissue has to be reproduced by filling, and it is to the support of this argument that the present paper is mainly directed. We have been too much inclined to accept the idea that nature is perfect in her forms, when, as a matter of fact, nature is infinitely imperfect. I am aware of the force of criticism which such a statement as that is likely to call down upon me, and yet I ask your careful consideration of the question before lightly taking issue.

Let us look at the whole world of nature and see if we may discover in any of her manifestations absolute perfection of form. In all the myriad pebbles on the sea shore there is not one of perfect

symmetry. The leaves of grass, the grains of wheat, the kernels of corn, and even the towering monarchs of the forest that inspire and thrill us with their grandeur, all lack something of being perfect. True, there is immense diversity of form in nature and that diversity is interesting to our mind and pleasing to our senses. And in color nature gives us wondrous hues that delight our eyes and make us almost worship her. And yet, with all this in the matter of form nature stumbles and struggles in vain to reach perfection.

Coming a little nearer the immediate question under discussion, nature never gave us a perfectly formed man or woman, and in this connection is illustrated the point we wish to emphasize in this paper. Art has accomplished what nature failed to do. Art gave us an Apollo Belvedere and a Venus of Milo, and never in all the countless sons and daughters of Adam has ever such perfection of form been manifest. It is true there have been beautiful men and beautiful women, there have been human forms in which perfection has nearly been reached. Nature seems to strive after the ideal and occasionally she comes wondrously near it. But it is safe to say of her most beautiful forms in either plants or animals that there is always some slight lack of proportion to mar the symmetry.

And this is true of the teeth as well as of other forms in nature. It is doubtful if any one has ever seen a perfect set of natural teeth. We may see sets of teeth which are beautiful and which answer admirably the purposes for which they are intended. Nature in this, as in other manifestations, sometimes approaches very near the perfect, but it is only occasionally that she does this. The large majority of natural teeth lack materially in form when viewed in comparison with what we conceive to be the ideally perfect tooth. And nature is so diversified in the forms she gives the human teeth, she indulges in so many whims and freaks of shape, that it is a more hazardous guess than many in the profession seem to think, to say what is a typical set of natural teeth.

In view of all this it need not be considered sacrilegious to claim that a man, who combined the best qualifications of the mechanic and the artist, could form, after studying carefully the requirements of the teeth, a more mechanically perfect and a more artistically beautiful set of teeth than nature ever produced. True, he could not give them life. That is the one supreme and awful limitation in the presence of which art must stand silent. We are not argu-

ing for the supremacy of art over nature except in the one manifestation of form.

Now if we will study this matter of contouring fillings—if we consider each case carefully with a view to the greatest utility, the greatest integrity of the filling, and the greatest comfort to the patient—we shall find that we do not need invariably to follow the natural form to gain the best results. The great problem for us to determine in each individual instance is the requirements of the especial case in hand. If the natural form of the tooth previous to decay was in our judgment the best form, then we may reproduce it, if we can do so with safety to the filling. And here arises another consideration which should not be overlooked, in view of the desirability of making the filling as permanent as may be. When nature builds up a tooth, she gives it a complete continuity of structure throughout its circumference. She cements the constituents of dentine and enamel together into an integral mass, and this mass is not easily broken by force. When decay takes place there is a solution of the continuity and no material that we can use to fill the breach will cement those broken margins together again. The filling may be strong and dense in itself, but there is always a line between filling and tooth which interrupts the continuity of structure, and back from this line the wall of the tooth will break away with less strain than when there was a complete covering of enamel. There are cases where the occlusion is such that this is an important consideration, and where it may be deemed the best judgment to modify the natural form with a view to greater permanency for the filling. By this it is not meant that the filling should be made flat. It should in all instances be built out mesially or distally, as the case may be, to a contact point sufficient to preserve the inter-proximate space, but this contact point need not always be broad. The filling may be sloped away from it in such a manner that there is little leverage from occlusion. A judicious sloping of the filling will result in a clean, comfortable inter-proximate space and a filling not easily dislodged by mastication.

It is impossible to indicate all of the various cases in which it might be considered the best practice to vary from the natural form. Instances arise almost every day in practice where we can improve the condition of affairs by a judicious study of the principles involved. As has been intimated, the two main considerations

to keep in mind in making proximate fillings are the preservation of a proper inter-proximate space and the security of the filling. Dr. Black and others have pointed out most clearly the ill effects of closing the inter-proximate spaces, and we have all seen in practice the folly of invariably following nature in the reproduction of a broad table-like masticating surface. Fillings have been forced out and walls have been broken down too often to allow us to go on taking so many chances. There is a line of practice which if followed judiciously will prevent so many failures, and still save the spaces.

The first thing that we must get instilled into our minds is the fact that we are not operating for the purpose of gaining a greater masticating surface. A patient will have more service and a greater degree of comfort with a set of teeth in which one-half of the natural masticating area was cut away and the interproximate spaces preserved in a healthy condition, than with a set where all of the masticating area was retained and two or three spaces left unhealthy.

The question now arises: How are we to preserve the interproximate spaces without building the filling out to a broad occluding surface, thus increasing the risk of failure? I will cite two or three examples and describe the method of filling in each case, and while this may lay me open to the criticism of those who advocate nothing but the preaching of principles in societies and who deprecate the description of method, yet I know of no other way in which I can so quickly illustrate my point.

Take for example a lower second bicuspid with a large distal cavity, involving the occluding surface. It will be admitted that this is a case calculated to try the efficacy of any method. The first requirement is sufficient separation. Then the cavity is prepared in the usual way with the possible exception that the lingual wall, which is ordinarily quite thin, is cut away in the direction of the mesial surface of the tooth. In building up the gold along the cervical portion of the cavity attention is concentrated on the object of giving form to the inter-proximate space. At this stage of the operation we should watch the shape we are giving the space rather than the shape we are giving the filling. In other words we should contour the inter-proximate space. When the filling is high enough to insure sufficient space for the gum to fill in and remain healthy—and this does not always necessitate the contact point

being carried quite near to the occluding surface—provision should be made for contact at a point much nearer the buccal than the lingual wall. This should be made prominent enough to hold the teeth well apart and to guard the gum beneath it, but it does not necessarily follow that it should be broad. From this point the filling is sloped well away lingually and also toward the summit of the occluding surface. There is no shoulder or strong marginal ridge given the occluding portion of the filling. It is not built out into a broad masticating surface, and therefore there is not sufficient leverage on it to dislodge it or to break the cavity walls. I have quite a number of these filling in the mouths of my patients and I have watched them closely. They are doing good service, and the inter-proximate spaces are preserved and the gums healthy.

One word, by the way, on the treatment of the gum septum during filling. If possible the operator should avoid lacerating the gum. The space will fill quicker and more perfectly if the gum is preserved intact. For this reason the rubber dam should be left on for protection till the proximate surface of the filling is finished and polished. If the gum is much in the way of the operation it should be previously pressed back by placing gutta-percha between the teeth some time before operating. This will force the gum out of the way without wounding it, and if treated in this manner it will creep up into position again and fill the space in a few hours after the operation.

For another example take a long, narrow upper bicuspid—the form of tooth in which the walls are most likely to be broken down by mastication. It is seldom advisable to cut away the lingual wall to the same extent as in a lower bicuspid on account of the difference in the shape of the lingual cusps. But with all of these proximate cavities in molars and bicuspid, where decay has undermined the enamel to any extent in the direction of the cusps, the angles between the proximate and occluding surfaces should be cut well back so that the cavity is given a broad orifice. In addition to this, in the class of teeth just mentioned (the long, slim bicuspid), the buccal and lingual angles of the marginal ridges are dressed well away with a disk in the engine so that the tooth viewed from its buccal or lingual aspect will present an outline in which the occluding surface slopes rapidly away from the tip of the cusp toward the proximate surface. When the filling is inserted the gold is sloped away in the same manner so that no

shoulder is left for the cusp of the occluding tooth to exert a strain upon. In fact in any case where the sharp point of the cusp occludes squarely upon a large proximate filling near its proximate surface so as to bring undue leverage upon it, the filling should be sloped well away. This allows the point of the cusp to glide by the filling and presents the sloping surface of the cusp to the sloping surface of the filling. Whatever force of mastication may be brought to bear on a filling of this shape it will tend to drive the filling into the cavity instead of tearing it away. An objection may be urged against this form of filling from the fact that it brings the contact point somewhat nearer the neck of the tooth than if a broad, horizontal masticating surface was made, but my experience has led me to believe that we may safely shorten the inter-proximate space if we are careful to give it symmetrical outline and to finish the proximate surface of the filling smooth and even with the margin of enamel, so that the gum may overlap it without being irritated. I am aware that some operators in writing on this subject have argued the necessity for making the contact point as near the occluding surface as possible, but I have watched this matter somewhat closely in my own practice and I am convinced that we may often shorten it preceptibly, especially in those long bell-crowned teeth, without detriment to the gum and with a far greater degree of safety to the filling. By shortening it, however, I do not mean narrowing it.

One further example will suffice: Take a lower molar, large distal cavity with the lingual wall involved to a short distance from the developmental line, which extends from the central pit on the occluding surface over onto the lingual surface. Let this line be marked by a deep fissured groove so that when the fissure is drilled out in the preparation of the cavity there will be nothing left posteriorly but a narrow strip of enamel, ragged in outline, and illy supported by dentine. If the filling is built out into the natural form of the tooth that wall will be almost certain to break away so that the best practice seems to be to cut it away in the first place and destroy altogether the disto-lingual cusp. In inserting the filling gain contact near the buccal wall and slope well away from that, leaving the tooth without that one cusp. We should always look well to the permanency of our work, and, as has before been intimated, we may well sacrifice masticating area to gain this object.

Before closing the paper it may seem desirable, in view of the charge made at the outset, that nature does not often give the best form to the teeth, that at least one example of defective form be mentioned. I have said that instances will occur in the practice of every discerning operator where he can improve the malformations of nature by the judicious application of art, but these are usually so varied in character that they are difficult of classification. I will mention one characteristic of the teeth, however, which will illustrate what is meant.

In the first place, we must remember that one of the chief functions of the teeth is the mastication of food. This food consists of various substances, meats, fruits, vegetables, etc. Select an ordinary set of teeth and look along the occluding surfaces of the molars and bicuspid and see if they are really as well adapted to this purpose as is popularly supposed. The fact is that not one set of teeth in a hundred is so arranged as to give the best mechanical results in mastication. One of the chief defects is incident on the grooves and sulci which follow the developmental lines. Where these are deep and run up into a crevice between the cusps they form just so many flaws in the mechanical machine. I do not wish to be understood as advocating a flat, smooth, masticating surface, but it is manifest that these deep sulci form a lodgment for small particles of food to the subsequent discomfort of the individual. I have said that part of our food consisted of fruits. Probably one of the most delicious variety of fruits is the berry. I should like to ask those members of this society who are afflicted with teeth having deep sulci, what kind of satisfaction they get from the mastication of a dish of raspberries? To have a quantity of that delicious, fragrant fruit placed in front of a hungry man under those circumstances is the most enticing, exasperating abomination in the experience of mortal man. The truth is that we mumble over our berries instead of chewing them, and we lose half the flavor as a consequence.

I may be asked what art could do to improve the form in this connection? I answer; that art often unconsciously improves the form of these teeth when decay has occurred in the fissures and a filling is made which closes the sulcus and rounds out the fossa. A tooth filled in this way will be infinitely more comfortable to the patient and therefore more effective in mastication than it ever was in its natural state, and in teeth conspicuous for their deep sulci I

am not sure that we could not render our patient material service by filling where decay has not actually taken place.

This is only one instance where nature is not perfect in the form she gives the human teeth, and others will occur to the discriminating operator in practice.

I am convinced that a close study of this phase of the question will result in much benefit to our patients.

FERMENTATION IN THE HUMAN MOUTH.*

BY DAVID P. SIMS, SCHUYLER, NEB.

What is life? is a question which man is ever asking of the universe, of which though so wonderfully made he is so small a part.

Our philosophers have advanced many theories and explanations of the vital phenomena of life.

Once "primordial slime" having the same qualities of the now known protoplasm was considered to be the source of life.

However it cannot be said to be self-originating.

The distinctive characteristic of living matter is motion, of inanimate matter, rest; and it remains as dead as the peridental membrane of an implanted tooth, unless endowed with the properties of life by organisms already living.

Evolution has been a very popular theory.

To me there seems a repulsive poverty in this attempted explanation, that is contradicted by the grandeur of the universe.

Pasteur has said: "Spontaneous generation is a chimera."

And to-day humanity asks the same question, what is life?

Leaving the question of how life originates and the philosopher chasing his *ignis fatuus*, evolution, and attempting to console himself with his near relationship to the simiadæ, we will pass to life as it presents itself to us every day.

Without a correct scientific knowledge of the anatomy and physiology of the parts on which we work, and the power to discriminate in the use of the materials and medicines we use, we do not merit the name we bear as members of one of the noblest professions, but are mere mechanics.

The numerous theories which have been held concerning the cause of dental decay prove the problem a hard one. No one of them has been generally accepted. The chemist declares that ca-

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ries is produced by the action of acids on the lime constituents of the tooth.

The biologist with his glass sees floating in the acid myriads of micro-organisms and declare they excrete the acid which decalcifies the tooth.

The electro-chemist with his galvanometer discovers an electrical action, which he says produces acid prior to the fermentation by the microbes.

These three agree upon an acid basis, but the second I consider the most important.

The average dentist, burdened with the cares of a practice, cannot turn his laboratory into a bacteriological garden.

This we must leave to our scientists, Miller, Black, Koch and others. The past decade has been fruitful in results and much has been done in determining the cause and prevention of disease.

It has long been known that various kinds of bacteria are found in the air, water, soil, etc. They belong to the vegetable kingdom and propagate themselves by means of spores, *i. e.* simple bodies or cells.

They are therefore classed with the cryptogamous plants.

Not bearing leaves they are called thallophytes; these are divided into fungi; algæ and lichens, This microscopic vegetation I assert is of all species of plants the most useful and the most destructive.

They are the chief agents in the production of those decompositions, designated fermentation, putrefaction, &c., thus not only preventing the accumulation of dead animal and vegetable matter, but producing from this complicated mass those compounds, carbonic acid and ammonia, without which our chlorophyll bearing vegetation would become extinct.

Bacteria flourish only under certain conditions, these are air, food and a suitable temperature. A nutrient solution for them should contain albumen, carbo-hydrates, and small quantities of salts.

The accumulations in the human mouth at all times contain these, and that these microbes are not slow to avail themselves of this fertile field is amply demonstrated by the balmy breath of many of our patients.

One of the chief conditions for the formation of spores seems to be a partial exhaustion in the culture media.

A necrotic tooth pulp presents this condition. Again in cases of difficult extraction, where the gums are badly lacerated, and not having the vitality to resist the invasion of germs, become necrotic and slough off exposing the process.

The hypodermic injection of drugs for painless extraction may produce the same results. A case of this kind has just been reported to me to-day by a physician. The face being greatly swollen, the swelling extending to the shoulder and the patient suffered severely.

Operative dentistry is a specialty of surgery. Those who practice it should be acquainted with the fundamental principles upon which surgery is based, which of modern science is antiseptic.

In the case reported, if the syringe used was septic, as I suppose it was, the performance was a successful inoculation.

The extraction of any tooth in a foul mouth, not under antiseptic precautions, is an infection, or if not, it is because nature is so very kind to us. If infected, the patient returns in a day or two with a greatly swollen jaw. He remarks that he has caught cold in his jaw, and wants you to give him something to take it out.

We should see that all our instruments are washed in an antiseptic solution, to guard against these annoyances, which are not complimentary to us as dentists.

Accepting the chemico-parasitical process as the cause of caries of the teeth, it is not difficult to trace the source of the acid to the fermentation of certain carbo-hydrates, starch, sugars, etc., which lodge in the fissures and between the teeth. This acid, chiefly lactic acid, breaks down and decalcifies the enamel. The second stage, dissolution of the dentine, is accomplished by the bacteria.

The basis substance of dentine consists of albuminous matter, which many mouth bacteria have the power of dissolving.

An examination of the teeth of different races show that the meat eaters are quite free from decay. Decomposing meat lodged between the teeth will not induce decay, as but little acid is developed, the reaction being always alkaline.

Of all the food we eat, bread and its accumulations on the teeth are the most destructive, producing the most acid, and adhering to the teeth, while sugars soon dissolve and are carried away.

We all frequently meet with a tooth or root harboring a putrid pulp and still perfectly comfortable. Why is this? By some

means the root canal has become closed, excluding the air. The bacteria then perished from lack of oxygen, or they may have died when the nutriment of the pulp was consumed.

What is the result if the canal is opened. Frequently an alveolar abscess. It has been said that when the canal is opened, air rushes in carrying with it the germs.

Miller says, there being no vacuum in the canal, the air does not rush in, but that the trouble is a bungling operation by an awkward dentist, forcing septic matter through the apical foramen with a broach.

That this is sufficient to cause an abscess is true. But I have learned that trouble follows the opening of the canal even when no broach is used, caused I believe by an exchange of these gases and an admission of oxygen.

In these cases make no attempt to remove the *débris* at the time of opening the canal. Though carbolic acid is a little out of style, it is good for these cases, sealed in the tooth with a pellet of cotton and cement. Then appoint another sitting for the removal of the contents of the canal.

The oxygen of the air exerts special influence on bacteria.

In accordance with this fact they are divided into three classes.

1st. *Aërobic* ; those absolutely requiring air for their existence.

2d. *Anaërobic* ; those which demand absolute exclusion of air.

3d. *Facultatively anaërobic* ; those living either with or without oxygen, at least for a time.

This classification is taken from Miller.

He also says : " Most bacteria belong to the first class, but comparatively few *anaërobic* being known." Also " that the capacity of certain bacteria to proliferate when excluded from oxygen may explain the progress of tooth caries under air-tight fillings."

I never saw a case of secondary caries where there was not moisture, consequently air must be present.

Most bacteria belong to the first group. These if enclosed under an air-tight filling would die, oxygen being excluded.

None of the *anaërobic* could be enclosed under the filling, for any bacteria in the carious dentine before filling had abundance of air. Therefore no purely *anaërobic* exists in the mouth.

Those of the third group may live for a time either with or without oxygen. These are few in number, and even should we succeed in caging one of this rare variety, his action on the arena

of life is short. Perhaps once in ten thousand fillings would we encounter one. If this be true there is little danger from secondary caries by leaving a small portion of decalcified dentine over the pulp or elsewhere.

No good operator however will be careless in the preparation of cavities for filling.

To test the value of various antiseptics used to bathe the cavity before filling, Miller prepared a nutritive agar-agar plate, over which was placed a thin plate of ivory; on this was placed at different points carbolic acid, peroxide of hydrogen and bichloride of mercury.

The carbolic acid showed little penetrating power and used for this purpose is quite worthless. Both the peroxide of hydrogen and bichloride of mercury readily penetrated the ivory and prevented the growth of bacteria.

The antiseptic power of filling materials has of late attracted much attention. Of the whole list, copper amalgam is at the head.

This amalgam, old fillings of it and dentine from a cavity having contained it as a filling, when dropped on a nutritive gelatine plate show distinct antiseptic properties.

If the floor of a cavity be covered with iodoform then filled, dentine removed from the cavity, even after several days, and transferred to a culture plate is soon surrounded by a growth of bacteria and bud-fungi.

Sulphate of copper fillings tested in the same way show no trace of bacterial growth.

Can any application of these results be made in practice? I think there can be, but let us be as wise as babes and not like fools rush in where angels fear to tread.

The value of all theories and reforms should be well tested before attempting to make a practical use of them. Politically speaking, stick to the G. O. P. or to its conservative mate a little longer. A new alliance may be like the unbroken broncho "buck from the harness."

In closing I offer one word of caution, be conservative, "But be not like dumb driven cattle; be a hero in the strife," among the leaders in scientific investigation.

DENTAL EDUCATION.*

BY LOUIS OTTOFY, CHICAGO.

The education of the dentist is like the foundation of a building; it is always open to the question whether it is sufficiently well laid to bear the superstructure, and hence the subject, though much written upon and frequently discussed, is nevertheless one which always interests a dental society, and hence it is, I presume, that your executive committee requested me to write a paper on this subject.

It is my intention, in this paper, to treat that phase of the subject dealing with the college as it is, and as it should be. In the first place in our own country we labor under an advantage which is really a disadvantage. We have the noble privileges of having all branches of education under our own control, unlike the custom prevailing in other countries, where this subject is entirely under government supervision and in fact under absolute government control. This is especially true of higher education. In this glorious free country the right to control education is delegated to each sovereign State, and is consequently subjected to the caprices or notions of its people as represented or misrepresented in its legislatures. It is in this wise that we have so many different laws regulating the practice of dentistry in different States, and that schools and colleges are chartered with comparatively undefinable powers. Privileges of the utmost importance are granted to men of whom absolutely nothing is known. Thus there have sprung into existence during the last fifty years a number of institutions, intended, or supposed to be intended, for the training and education of men who purpose to enter the dental profession. Of the thirty-three in existence in this country to-day, some are good, others indifferent, and some are bad. This condition, from what I learn from those who are in a position to know, is, under the present circumstances, not to be remedied. It can be remedied only when the general Government takes control of education in all of the States that these evils can be corrected. In the meanwhile, the only duty that we all must perform, is that one which looks toward the improvement of the college, of its teachers and its students. At least so far as the students are concerned, each of us is in a position at different times to do something. We often

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find young men applying to us for advice regarding their fitness for dentistry, the course to pursue to enter the profession, and oftentimes the best course after they have entered our ranks. Before advising a young man to study dentistry, we should carefully look into the past history of the individual. Does he possess the necessary native ability and mechanical ingenuity? Has his education been sufficient, and has it been directed in the proper channel? Is the applicant morally fitted to become a professional man? Many of these points are overlooked, not thought of, and the result is that men and boys are sent to a dental college yawning for students, who have neither the ability or the education to commence the study of dentistry; and at this point the mantle of responsibility falls on the shoulders of the college. The latter, if well conducted, prosperous or independent, promptly refuses admission, unless the candidate is properly fitted. But then, there are many colleges that do not follow the course outlined, they must have students and take whoever they can get. It is at this point that the responsibility shifts upon the State, which issues the charter, according to the mandate of its people, *per* its legislature, to whosoever may ask for it.

In some measure at least, there is room for congratulation; as the National Association of Dental Faculties, which exercises a wholesome influence over our entire college system, hereafter will not recognize any dental college which does not require a three years' course; while this is a wholesome step and denotes progress, I am free to admit, that it does not accord with my *personal* view of justice and equity; for I am of the opinion that it does not matter, where or when or how a student acquires knowledge, so he possesses it, and provided that he is in a position to practically, as well as theoretically, demonstrate that he does possess the requisite knowledge. It is possible that a student who has practically devoted but two months to absolute college study, may be entitled to practice, although it might require an entire month to examine him in all the branches of dentistry and the collateral sciences with which he should be familiar. In lieu of the vigorous treatment which such a course presupposes, the matter now rests almost entirely in the hands of the members of the faculty of each college. Although there is much to criticise in the conduct of many of our colleges, I am well aware that many faults are only apparent and that many irregularities seem much less difficult of remedy than they really

are. Looking over the field carefully and impartially, I am led to hold the opinion, that with few exceptions the colleges are conducted with as much fairness and care as the surroundings make possible. I now refer to these colleges which are conducted and principally supported by practicing dentists, or in which dentists are the leading spirits. The exceptions above referred to are schools which have been organized by printers, wind-broken medical men, or shrewd charlatans who have seen some money in a "scheme" of this kind. These men are unscrupulous, and do not care a whit for the advancement of the profession. This class of institutions are those referred to as being conducted "for revenue only." It is the practitioner's privilege or duty, if you please, to learn to discriminate in these matters as well as in the matter of selecting suitable filling materials, for instance.

Of course we all hope that our colleges will so improve that they will all be reliable and perfect, and when that day has come—unless there is an amendment to the Constitution of the United States, placing education under the control of the government—we will also hear the sounds of Gabriel's trumpet. In the meanwhile we want to do what we can to improve the college; and as the college is only an aggregation of the dentist, your erstwhile student, the better the man you send to school, the better the school you send him to, the better will be his influence ever after, and if perchance he becomes connected with some college of the future, his beneficial connection will redound to the good of the profession. It is at this point exactly where the subject of dental education is brought down from its supposed lofty height of theory to that of practical advantage and duty to each and every one of us.

THE CARE OF THE DECIDUOUS TEETH.*

BY J. E. HINKINS, CHICAGO.

Man is born to troubles, and the first and not the last of them, from the infantile point of view, is the production of the first set of teeth. From soon after birth until the last of the deciduous teeth has been shed, the young heir of the universe has his mouthful of troubles. This process, lasting as a rule from the sixth to the twenty-fourth month, is accompanied by much local irritation and constitutional disturbance; objections which are not in the least

*Read before the Chicago Dental Society, 1891.

mitigated, in the view of the principal sufferer, by the consideration that the process is absolutely "natural" and "physiological."

The variety of complicating diseases which may be expected about this time is equalled only by the various methods of treatment proposed, further aggravated in most cases by the soft-hearted and soft-headed mother, who loves her offspring not wisely but too well. However, between two evils even maternal anxiety must choose the less, and as 'twixt the dentist and inflamed gums she feels herself between the devil and the deep sea, she chooses the former, figuratively speaking, *i. e.* she brings her howling, kicking kid to the office of Dr. Hammerantongs, for the first application to the teeth or gums. Happy is the doctor if he can overcome the hereditary and acquired prejudices of both mother and child sufficiently to enable him to take the necessary measures.

I. And first comes the dreadful question, to cut or not to cut? You all know too well to need any description the effect on female sensibilities produced by the sight of the lancet gleaming in the dentist's hand. This, however, is my rule and practice. If a child is brought to my office with a few teeth in sight, and the gums congested and very tense over the others, I sometimes lance. But it is better practice when the child is of hæmorrhagic diathesis, to lay the lancet down and take up constitutional treatment; as a mild cathartic. If the parents are homœopaths, Magnesia Phos., Creasotum, Calcareo Carb. and Phos., Chamomile, Mercurius, etc. But in giving calomel, I make it an invariable rule to stop short of turning the child inside out, as I prefer to keep on the right side of the patient, that is to say, the *outside*! If, however, none of these remedies give relief, I let the family physician try his hand.

II. Decay of the deciduous teeth should be met promptly. Too many people think that they are not worth any trouble or expense since they are only temporary; but the fact is that their proper treatment is of vital importance, for here lies the foundation of the permanent teeth.

For small cavities I prefer an amalgam, since as a rule it lasts much longer and preserves the tooth better than any other fillings which I have used. If the cavity is large enough to produce any pain, I prefer either cement or gutta-percha. Any inflammation is to be first reduced, of course, and sometimes the pulp must be destroyed before filling. The process of devitalizing the pulp calls for our best judgment and care, for we have to consider not only

the death of the pulp but, also the life of the permanent teeth so soon to follow in the same place. So closely allied are the two generations of teeth and so vascular are the tissues, that it is a prime mistake to attempt to consider or treat them independently.

When I find the pulp exposed and aching, my first application is carbolic acid, 95 per cent, on cotton, combined with morphine and cocaine which I mix together. After one or two applications of this kind I frequently find the pulp dead or mummified.

But sometimes these applications are not sufficient, and I apply arsenic, preferably the crude As_2O_3 . This application I always make in the morning and remove in the afternoon, on account of the diffusibility of the drug, covering the cavity with some quick setting oxy-phosphate of zinc.

In order to emphasize the importance of great care in using this powerful drug, I will here read a short extract from an article by Dr. J. J. Putnam in the *Journal of the American Medical Association*, entitled "Arsenic as a Domestic Poison."

"That the effects of arsenic—like those of lead and phosphorus—are in a measure dependent upon the action of the stored-up poison, is shown by the fact that the symptoms of medicinal poisoning often appear only when a given dose has been taken for some time, after which the patient is apt to show an increased sensitiveness (though this is not regularly the case).

A few years ago I collected a number of the severer cases of medicinal poisoning, and I give here a few of them in brief outline. The cases of paralysis are especially noteworthy because they are now known to occur frequently in arsenical poisoning of a certain grade, and, as we shall see, they reappear among the cases of 'domestic' poisoning.

1. Gaillard: Typical arsenical paralysis following full doses of Fowler's solution, increased to the limits of tolerance and administered for five weeks.

2. *Canada Med. and Surg. Journal.*, 1886-87, Vol. XV., p. 716: Arsenical paralysis, ending fatally, after large doses (Mxx to xxx) of Fowler's solution. The autopsy showed the presence of neuritis.

3. Hastings: Arsenical paralysis with neuritic symptoms, following M iij to v of Fowler's solution continued for some weeks.

4. Gibb: Long course of arsenical treatment ending in neuritis, causing disorders of sensibility, pain and paralysis. The pa-

tient died six months later, having taken no arsenic in the interval, and traces of arsenic were found in the liver and bones.

5. *Dublin Quarterly Journal*, Vol. XXXVI, p. 474; Mij of Fowler's solution were taken daily for ten or twelve months, at the end of which time 'symptoms of acute arsenical poisoning' came on, ending rapidly in death.

6. C. L. Dana: Arsenical paresis with ataxia, Mxxx of Fowler's solution three times daily, in spite of the fact that the dose had been gradually increased.

7. Hooper: M v of Fowler's solution were given three times daily for eight months. Toward the end of this time the following symptoms came on and increased, ending three months later in death; conjunctivitis with œdema, tachycardia, tremor, excessive and progressive prostration, insomnia, irritation of the trachea and larynx.

8. Jones: M v to xv of liquor arsenicalis given three times daily; at the end of a month, intense gastro-intestinal irritation, scanty urine, trophic changes in the legs, sensory and motor paresis.

9. Burne, cited by Taylor: Gr. $\frac{1}{20}$ of arsenious acid daily for four days; then inflammation of the stomach, delirium, debility and exhaustion.

10. Taylor: Gr. $\frac{1}{30}$ of arsenious acid taken twice daily for seven days, then, 'sickness,' irritation of the skin, and eczema over the whole body.

11. Taylor: M x of liquor arsenicalis chloridi (said to be a very poisonous preparation) taken three times in the course of twenty-four hours; then, constriction in the throat, pain and irritation of the stomach and bowels, tingling and numbness of the hands and feet, with paresis, extreme depression; gradual recovery.

12. Personal observations: M iv to v of Fowler's solution taken three times daily for six weeks; then there came on extreme prostration, pains of severe character in the extremities, widespread muscular atrophy, and paralysis, so severe that the patient was helpless for many months."

A case of arsenical poisoning which came under my personal observation is also to the point. Last December Mrs. J. called at my office to have her mouth examined. I found full upper denture and sloughing on the right side of the mouth from the median line to a little back of the canine process, and this had penetrated internally to the outer plate of the superior maxillary

bone. She complained of headache, dryness of the throat and considerable stomach trouble and a conjunctivitis which was quite apparent. On close inquiry I found that she had been doing fancy needlework, and as she admitted taking the thread continually in her mouth, I suspected arsenical poisoning. Removing the diseased tissue as best I could, I bathed the parts with hydrated iron, and gave it internally in alternation with quinine. Two weeks of this treatment, with plenty of fresh air and no needlework, wrought great improvement. My suspicions were verified by a chemical analysis which showed a marked arsenical reaction from three of the highly colored threads.

III. Teeth with abscesses should be opened up to relieve pressure, washing out with H_2O_2 and dressing with some of the essential oils. Sometimes it is necessary to fill root canals with fiber of cotton dipped in oxy-chloride of zinc or carbolic acid, to be followed promptly by gutta-percha filling.

IV. The last act of the tragedy of dentistry is extraction justly dreaded by both operator and operatee. Though the hurt he does is done in kindness, yet it is scarcely to be wondered that to childhood's eyes the dentist should seem a fiend incarnate. Yet much of this is due to lack of good judgment on the part of the laity, and even sometimes we must admit on the part of members of the dental profession. Never deceive a child. The discovery that you are capable of even so slight a falsehood as saying, "It won't hurt at all," when you know it will, is a shock to his innocent confidence which he never forgets and never forgives. Honesty is the best policy always. There are two conditions of mind in which the child may be. He may have been told unwisely by his attendant that "It won't hurt any," or he may have been frightened nearly into hysterics by playmates who have a truly grown-up fiendishness for stirring up trouble. In either case the proper course to be pursued is a *kind, gentle truthfulness* which shall secure for you the child's respect and confidence. In this refusal to place confidence and liking where respect is lacking, childish ignorance teaches a much needed lesson to adult wisdom.

Just when the temporary teeth should be extracted is one of those important questions for which, unfortunately, no hard and fast rule can be laid down. Haste or carelessness in extraction are liable to produce irregularities of the subsequent teeth, which will be either permanent or remedied only at the cost of months of

labor, suffering and expense. As in most of the important affairs of life, our chief guidance rests in experience and uncommon common sense, paying due heed to the condition and position of the adjoining teeth and to the general condition of the patient. For myself I follow the rule of never removing a cuspid tooth to make room for the permanent lateral incisors. I sincerely believe that this mistake has been the cause of more irregularities of the teeth than any other one thing.

Should a child be given any anæsthetic in dentistry? Not if it can be avoided, particularly if the child is in good physical condition. Much better, if possible, in all operations on the teeth to tell them kindly that it will hurt a little but only for an instant, that you will be as gentle as possible, and try to inspire the little trembling mite to courage. Many children will respond grandly to such a moral tonic, and you have the satisfaction not only of winning your case, but far better, of having contributed a great block of granite to the building of the future man's or woman's character.

But there are many cases, particularly among the hyper-nervous children of the city, in which this course is both impracticable and unadvisable. Even if you can screw the courage of a very sensible child up to the sticking point, it is better to avoid the nervous shock of extraction by a few whiffs of chloroform or gas, just enough for its primary effects.

In conclusion I will say that if we are gentle and truthful with these little ones and do the very best we can under the circumstances to save the tooth until the proper time for its removal, we have discharged our professional services faithfully.

CEMENT LINING FOR DECIDUOUS AND PERMANENT TEETH.*

BY L. S. MOORE, GRAND ISLAND, NEB.

In filling teeth for the adult there is great responsibility. But to the conscientious dentist there is a greater responsibility, when called upon to fill the teeth of the young. Experience teaches that the teeth of the young are as a rule soft and not so thoroughly compact and established as those of the adult.

Therefore it behoves us as dentists, to guard against and assist nature so far as we can, in preserving and building up these ten-

*Read before the Nebraska State Dental Society, 1891.

der organs. This is accomplished in a degree by excluding air and other substances from entering the defective tooth. This in my opinion is best accomplished with a cement lining first, then completing with any permanent or gold filling.

How many of us have noticed the change for the better in the dentine on removing the remains of a cement filling. Therefore with these facts before me, it has been my practice for some time, to line the cavity with a thin coating of cement, as follows: Prepare the cavity as usual after adjusting the dam, and mix the cement quickly, being careful not to get too much liquid and do not insert until the material is of the consistency of putty. Cut the material in small pellets and gently press to all sides, allowing it to come to the edge of the enamel, leaving space enough for the amalgam or gold to come in contact with the tooth at margin. Thus you have a complete union of both tooth and filling. In using amalgam, both materials can be inserted at one sitting, and before the lining is thoroughly set.

This method is most practical in frail teeth with thin walls.

Then in cases where it is not possible to get retainers or undercuts where we desire them, you can rely on the cement for such partial assistance. Insert cement as for complete filling and after a few days prepare a cavity in the cement as above described, being careful not to leave any cement exposed, but all to be covered by the permanent filling.

I can recall fillings inserted several years ago, as temporary ones, until I could get time to introduce permanent ones, to-day there remains cement adhering to the teeth and sides of the cavities, thus preserving that part of the tooth as no other filling can.

PROCEEDINGS OF SOCIETIES.

AMERICAN DENTAL ASSOCIATION.

The thirty-first annual meeting of the American Dental Association was called to order at the Town Hall, Saratoga Springs, N. Y., on the morning of August 4, 1891, by the president, A. W. Harlan, of Chicago. After preliminary business and miscellaneous reports, Dr. L. D. Shepard, of Boston, read a committee report on the New Hampshire Case, according to which the dentists of New Hampshire were endeavoring to secure the enactment of a

new dental law, inasmuch as the old law was defective and had been declared unconstitutional.

Dr. H. B. Noble, of Washington, D. C., on behalf of Dr. A. H. Thompson, of Topeka, Kan., chairman of a committee appointed last year on the "appointment of dental surgeons in the army and navy," read a report according to which the Surgeon General of the United States Army does not deem it necessary to have dentists appointed. Whenever troops are massed in garrison it is generally near a large city where the services of skilful dentists may be secured, while those troops not so situated are generally only a few hours distant from places where dentists are located. This is due to the increase in railroad facilities. The committee did not deem it advisable to recommend further action in this matter.

On behalf of the committee on Dental Legislation, Dr. Noble reported substantially the infeasibility of a national law governing dental colleges or examinations, and recommended instead that the various State laws be made more uniform, and that dental colleges, societies and boards of examiners act in unison in enforcing the laws as they are.

The District of Columbia is without a law, and dentists throughout the country are urged to request their senators and representatives (who enact the laws for the District) to secure the passage of an act to regulate dental practice in the District.

Dr. A. W. Harlan, of Chicago, then read the annual address, wherein touching reference was made to the death of Drs. Atkinson, Maynard and White, during the past year. He recommended that some method be devised whereby the work of the association can be better accomplished than it now is by the sections. He further recommended rotation in office of section officers, inasmuch as the entire work of a section is often for years the result of the labor of one man. It was also recommended that the business and miscellaneous work of the association be delegated to an executive council.

A committee for the purpose of revising the constitution, having such change in view, was subsequently appointed, it made a report before final adjournment, and has since printed and distributed the report among members of the American Dental Association. It was also recommended that the constitution be so amended that the Association may meet at any time of the year,

and thus be enabled to meet in sections of the country unfit for convocations during the month of August.

A plea was made for the establishment of dental societies in cities and towns of 25,000 to 50,000, where there are none, and a closer intimacy between the American Dental Association and local societies, was also recommended. A wish was expressed that everything will be done to make the great dental meeting of 1893 a grand and unequalled success.

The chairman of Section VI on Physiology and Etiology, Dr. H. A. Smith, of Cincinnati, O., then made his report according to which the examination and tabulation of the condition of prehistoric crania is now in progress, and Dr. John J. R. Patrick, of Belleville, Ill., the curator of the investigation made a statement as to the progress of the work, the summary of the same to be published in the forthcoming transactions of the American Dental Association. Dr. Smith also read a brief report on Implantation by Dr. Louis Ottofy, of Chicago, based on a continuation of inquiry regarding this operation. According to this, implanted teeth are successful for a period of from three to five years, no other operation in dentistry equals it in beauty and approximation to nature; no disease has been transmitted by transplanted teeth so far as known.

Dr. E. S. Talbot, of Chicago, then read a paper entitled "Mouth Breathing not the cause of Contracted Jaws and High Vaults." The author bases his arguments of his investigations embracing a large number of cases of mouth breathers, of whose arches and vaults measurements had been made, the paper was illustrated by diagrams, and a number of models proving the assertion of the essayist were also exhibited.

Dr. L. E. Custer, of Dayton, O., then read a paper on the "Physiological Action of Obtundents." The essayist expresses the opinion that in the degree in which an agent is able to reduce the temperature of the dentine and hence the dentinal fibrils, in that degree is sensibility destroyed. That the reduction of sensibility is not *per se* due to evaporation or coagulation but to the abstraction of heat. It is unfortunate, however, that the very agents which are most effective are most dangerous.

Dr. J. D. Patterson, of Kansas City, Mo., then read a paper on the "Diseases of the Oral Mucous Membranes." Attention was directed to the conditions preceding the appearance of symptoms of pyorrhœa alveolaris, decrease in the vital functions, uncleanli-

ness and the accumulation of broken down cell tissue, infiltration, and eventually the entrance of the germs, followed by the usual well-known symptoms.

Another irritant of the oral mucous membrane referred to was mouth breathing, leading to a reduction in the temperature of the mucous surface, a decrease of the natural moisture, a stopping of the mucous ducts, etc.

Uncleanliness is also the cause of many of the affections of the oral mucous membranes. These conditions eventually lead to what are termed catarrhal inflammations, there is an increased abnormal secretion, extending over a greater or smaller surface of the mucous tract covering the nasal passages, pharynx and contiguous chambers. Pyorrhœa alveolaris is by the essayist considered a catarrhal condition and not a disease of special cause or pathology.

The conclusions arrived at were (1), that where the cause of diseases of the mucous membrane is obscure, it is often due to thermal shock, catching cold, mouth breathing, etc., rather than hereditary conditions, constitutional diathesis or the invasion of microörganism, etc.; (2) the irritated mucous membrane is not pathognomonic of any special irritant, but is simply a condition; (3) this condition is a catarrh, (4) which is not *per se* a disease, and (5) that pyorrhœa alveolaris is merely a certain stage of a catarrh of the mucous membrane.

A paper entitled "The Dentition of the Felidæ," by Dr. A. H. Thompson, of Topeka, Kan., was then read. This paper is the result of considerable inquiry into the subject of the development and specialization of the teeth of the order of carnivora known as the cats. The essayist traces the progressive and retrograde metamorphosis which resulted in the present dentition of the cat.

Dr. H. A. Smith, of Cincinnati, Ohio, then read a paper on "Phagocytes." According to the view of the essayist the phagocyte or leucocyte is generally supposed to be the carrier of nutrition and also the remover or scavenger of the effete or poisonous matters of the blood and system including bacteria, etc. It has been claimed that in cases of immediate root filling it is the phagocyte which removes the effete matters not properly removed at the treatment, and that it is their activity which prevents an accumulation or increase of bacteria. It is also claimed that probably the phagocytes are quite active in assisting in the cure of pyorrhœa alveolaris,

the destruction of the germ of this disease, etc. While it is not positive that these unaccounted-for results are due to phagocytosis, the hint is thrown out that probably their true function has not been well understood.

Dr. W. C. Barrett, of Buffalo, then read a paper entitled "A Plea for Conservatism." The author protests against the extreme position now taken by the profession regarding the importance of bacteria as factors of disease. No indifference to antisepsis and antiseptic treatment is to be tolerated, but on the other hand the effect of microorganism is not to be considered as the only thing to be taken into consideration. Microbes abound everywhere, many of them are known to be always present in the organism, and are not injurious, it is well and necessary to be cleanly, careful and cautious, but it is not a safe practice to neglect other important considerations while constantly watching the microbe.

Dr. John S. Marshall, of Chicago, read a paper on "Pyoktanin Blue in the treatment of cancerous growths with one case in illustration." The use of Pyoktanin blue in the case of cancerous growths which are beyond surgical interference is highly recommended. A number of interesting cases and experiments by surgeons are reported, and generally the growths when injected with a solution of this drug, have disappeared. An interesting case is cited by the author, in which a large growth was thus destroyed without any special inconvenience to the patient during the course of treatment.

Dr. J. D. Patterson, of Kansas City, Mo., reported a case of the treatment of fracture of the lower maxilla by means of an Inter-dental Splint Bridge. The lower maxilla was badly shattered, and after temporarily banding some of the teeth and bringing the fractured parts into apposition, a splint bridge was made which held the portions firmly together until the formation of new bone had taken place.

[TO BE CONTINUED.]

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The National Association of Dental Examiners held its tenth annual session at Saratoga Springs, commencing Monday, August 3, 1891.

In the absence of the regularly elected officers, Dr. L. D. Shep-

ard was elected president, and Dr. Levy secretary-treasurer pro tem.

The following State boards of dental examiners were represented:

Vermont.—James Lewis.

New Jersey.—Fred. C. Barlow, Fred. A. Levy.

Ohio.—J. Taft, H. A. Smith, L. E. Custer, C. R. Butler.

Pennsylvania.—Louis Jack, W. E. Magill.

Georgia.—George W. McElhaney.

Maryland.—A. J. Volck.

Massachusetts.—L. D. Shepard, J. S. Hurlbut.

Mississippi.—W. H. Marshall.

Iowa.—J. T. Abbott.

Louisiana.—Geo. J. Friedrichs.

The following State boards were admitted to membership:

Tennessee.—J. Y. Crawford.

New Hampshire.—E. B. Davis.

Maine.—E. J. Roberts, D. W. Fellows.

A committee, consisting of Drs. Shepard, Fellows, Crawford, McElhaney, and Magill, was appointed to confer with a similar committee from the National Association of Dental Faculties, for the better understanding of questions involving educational interests.

The committee subsequently reported that the conference committees had agreed upon the following resolutions, which were, on motion, confirmed:

Whereas, There can be no question that the main object in view of both the National Association of Dental Faculties and the National Association of Dental Examiners is the better preparation of the young dentists for usefulness in the community, and that to secure this end it is desirable that the State boards of dental examiners and the colleges should work in harmony; therefore

Resolved, That it is recommended to the State boards that when a graduate after examination has been refused a license and his college requests information as to the causes of his failure to pass the examination, the board shall furnish the faculty with a detailed statement of the subjects and questions on which the applicant has failed.

Resolved, That we discountenance the publication by the State boards of the names of colleges whose graduates have failed to pass.

The committee on colleges reported that they had received reports of the number of matriculates and graduates of twenty-eight colleges, as shown below:

NUMBER OF MATRICULATES AND GRADUATES OF THE DENTAL COLLEGES.		Matriculates.	Absentees.	Graduates.	Ratio.
Baltimore College of Dental Surgery	Baltimore, Md.	224	3	76	34.3
Boston Dental College	Boston, Mass.	96		31	32.2
Chicago College of Dental Surgery	Chicago, Ill.	323		94	23.
Harvard University, Dental Department	Boston, Mass.	44		15	34.
Kansas City Dental College	Kansas City, Mo.	110	5	43	40.
Missouri Dental College	St. Louis, Mo.	90		26	28.8
New York College of Dentistry	New York, N. Y.	283	8	85	30.9
Ohio College of Dental Surgery	Cincinnati, Ohio.	208		75	36.
*Pennsylvania College of Dental Surgery	Philadelphia, Pa.	252	17	94	40.
†Philadelphia Dental College	Philadelphia, Pa.	315		146	46.3
University of California, Dental Department	San Francisco, Cal.	63		16	25.4
University of Iowa, Dental Department	Iowa City, Ia.	161		58	36.
University of Michigan, Dental Department	Ann Arbor, Mich.	132	1	29	22.1
University of Pennsylvania, Dental Department,	Philadelphia, Pa.	206	3	83	40.8
Vanderbilt University, Dental Department	Nashville, Tenn.	135		43	31.8
Northwestern College of Dental Surgery	Chicago, Ill.	14		3	21.4
Indiana Dental College	Indianapolis, Ind.	96		40	41.6
Dental Department of Southern Medical College,	Atlanta, Ga.	103		38	36.8
School of Dentistry of Meharry Medical College,	Nashville, Tenn.	5		1	20.
Department of Central Tennessee College	Baltimore, Md.	163	4	64	39.7
University of Maryland, Dental Department	Washington, D. C.	19		2	10.5
Columbian University, Dental Department	Canada.	67		27	40.
Royal College of Dental Surgeons of Ontario	Minneapolis, Minn.	36		7	19.4
College of Dentistry, Department of Medicine,	Chicago, Ill.	167		49	29.
University of Minnesota					
American College of Dental Surgery					
Aggregate		3312		1144	34.5
*15 female matriculates. †9 female matriculates.					
DENTAL COLLEGES NOT CONNECTED WITH THE NATIONAL ASSOCIATION.					
German-American	Chicago, Ill.	22		11	50.
Western Dental College	Kansas City, Mo.	61	1	9	15.
United States Dental College	Chicago, Ill.	43		11	25.5
College of Dentistry, University of Denver	Denver, Col.	12		5	41.6
Aggregate		139		36	
Whole aggregate		3451		1180	

Four colleges, members of the National Association of Dental Faculties, had failed to report, namely: University Dental College, Chicago; Dental Department, University of Tennessee; Louisville College of Dentistry; and Dental Department of National University, Washington, D. C.

The committee recommended that "as the next session of the colleges marks the commencement of the new plan of three years' college instruction, that this association request the National Association of Dental Faculties to require each school to issue each year an announcement containing a list of students, classified in the three grades of seniors, juniors, and freshmen; that this list

also in each instance designate the absentees, and that each school be required in the same announcement to publish a list of the graduates of the preceding session."

The committee also reported the following list of colleges which they recommend as reputable:

- Baltimore College of Dental Surgery, Baltimore, Md.
- Boston Dental College, Boston, Mass.
- Chicago College of Dental Surgery, Chicago, Ill.
- College of Dentistry, Department of Medicine, University of Minnesota, Minneapolis, Minn.
- Dental Department, Columbian University, Washington, D. C.
- Dental Department of Northwestern University (now the University Dental College), Chicago, Ill.
- Dental Department of Southern Medical College, Atlanta, Ga.
- Dental Department of University of Tennessee, Nashville, Tenn.
- Harvard University, Dental Department, Cambridge, Mass.
- Indiana Dental College, Indianapolis, Ind.
- Kansas City Dental College, Kansas City, Mo.
- Louisville College of Dentistry, Louisville, Ky.
- Missouri Dental College, St. Louis, Mo.
- New York College of Dentistry, New York City.
- Ohio College of Dental Surgery, Cincinnati, Ohio.
- Pennsylvania College of Dental Surgery, Philadelphia, Pa.
- Philadelphia Dental College, Philadelphia, Pa.
- School of Dentistry of Meharry Medical Department of Central Tennessee College, Nashville, Tenn.
- University of California, Dental Department, San Francisco, Cal.
- *Northwestern College of Dental Surgery, Chicago (defunct).
- University of Iowa, Dental Department, Iowa City, Iowa.
- University of Maryland, Dental Department, Baltimore, Md.
- University of Michigan, Dental Department, Ann Arbor, Mich.
- University of Pennsylvania, Dental Department, Philadelphia, Pa.
- Vanderbilt University, Dental Department, Nashville, Tenn.
- Western Dental College, Kansas City, Mo.
- Minnesota Hospital College, Dental Department, Minneapolis, Minn. (defunct).
- St. Paul Medical College, Dental Department, St. Paul, Minn. (defunct).

The report was adopted, and the committee on schools was enlarged to consist of one member from each State board. Dr. Louis Jack was appointed chairman of the committee, and the president, secretary and chairman were authorized to complete its membership and fill vacancies.

The following was adopted:

* The diplomas of this college are discredited after 1889.

Resolved, That this association requests the several boards represented in this body not to indorse beneficiary students.

The following officers were elected for the ensuing year: L. D. Shepard, president; W. E. Magill, vice-president; Fred A. Levy, secretary-treasurer.

The officers were empowered to select the time and place of the next meeting.

Adjourned.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The eighth annual meeting of the National Association of Dental Faculties was held at Saratoga Springs, commencing Saturday, August 1, 1891; the president, Dr. L. D. Carpenter, Atlanta, in the chair.

The following colleges were represented at the meeting: •

Baltimore College of Dental Surgery.—R. B. Winder.

Boston Dental College.—John A. Follett.

Chicago College of Dental Surgery.—Truman W. Brophy.

Harvard University, Dental Department.—Thomas Fillebrown.

Kansas City Dental College.—J. D. Patterson.

Missouri Dental College.—W. H. Eames.

New York College of Dentistry.—Frank Abbott.

Ohio College of Dental Surgery.—H. A. Smith.

Pennsylvania College of Dental Surgery.—C. N. Peirce.

Philadelphia Dental College.—Henry I. Dorr.

State University of Iowa, Dental Department.—A. O. Hunt.

University of Michigan, Dental Department.—J. Taft.

University of Pennsylvania, Dental Department.—James Truman.

Vanderbilt University, Dental Department.—W. H. Morgan.

Louisville College of Dentistry.—James Lewis Howe.

Indiana Dental College.—Junius E. Cravens.

University Dental College.—George H. Cushing.

Dental Department of National University.—James B. Hodgkin.

Dental Department of Southern Medical College.—L. D. Carpenter.

School of Dentistry of Meharry Medical Department of Central Tennessee College.—G. W. Hubbard.

University of Maryland, Dental Department.—Isaac H. Davis.

Royal College of Dental Surgeons of Ontario.—J. B. Wilmott.

American College of Dental Surgery.—T. Clendenen.

Dr. H. B. Noble, of Columbian University Dental Department, was also present, but not as a delegate.

The University of Denver, Dental Department, was reported upon favorably by the Executive Committee, and was elected a member of the association, and its representative, W. F. McDowell, took part in the meeting.

The applications of Western Dental College, Kansas City, and Dental Department Medical College of Tennessee, Knoxville, were reported favorably, and under the rules laid over for one year.

On motion, it was directed that the National Association of Dental Examiners be requested to appoint a committee of five to confer with a similar committee from the National Association of Dental Faculties in regard to matters of mutual interest between the two associations, their conclusions to be reported back to this meeting. The president appointed as the committee on behalf of the Faculties Association, Drs. Peirce, Winder, Eames, Truman and Morgan.

The committee subsequently reported the following resolutions as having been agreed to by the conference committees, and recommended that they be confirmed, which was accordingly done :

Resolved, That it is recommended to the State boards that when a graduate after examination has been refused a license and his college requests information as to the causes of his failure to pass the examination, the board shall furnish the faculty with a detailed statement of the subjects and questions on which the applicant has failed.

Resolved, That we discountenance the publication by the State boards of the names of colleges whose graduates have failed to pass.

The committee also reported favorably a communication from the National Association of Dental examiners, which had been referred to them, as follows :

"As the next session of the colleges marks the commencement of the new plan of three years' college instruction, we recommend that this association request the National Association of Dental Faculties to require each school to issue each year an announcement containing a list of the students classified in the three grades of seniors, juniors, and freshmen; that this list also in each instance designate the absentees, and that each school be required in the same announcement to publish a list of the graduates of the preceding sessions."

On motion of Dr. Cushing, the term absentee in the foregoing was construed to mean one who for any reason has not attended a full course.

The president being asked to rule upon the resolution adopted last year requiring dissections, decided that it was mandatory.

The following, offered by Dr. Abbott, was adopted by a unanimous vote :

Resolved, That any college whose regularly appointed representative fails to sign the constitution within one year from the time of its election to membership, shall be dropped from the roll of membership of this association.

Dr. Patterson, from the committee on codification of the rules, presented a report, which was amended and adopted, as follows :

ENTRANCE.

Resolved, that a preliminary examination be required for entrance to our dental colleges. Such requirements shall include a good English education. In case of any applicant failing to pass a satisfactory preliminary examination, the other colleges of this association may be informed of the fact. (Saratoga, 1884; Chicago, 1885.)

Resolved, That a candidate for matriculation who presents a diploma from a reputable literary institution, or other satisfactory evidence of literary qualifications, shall be admitted without further examination, (Saratoga, 1884; Chicago 1885.)

Resolved, That after the session of 1890-91 a diploma from a reputable medical college shall entitle its holder to enter the second course in dental colleges of this association, but he may be excused from attendance upon lectures and examinations upon the following subjects: General anatomy, chemistry, physiology, materia medica, and therapeutics. (Excelsior, 1890.)

ADMISSION TO SENIOR CLASS.

Resolved, That the colleges of this association may receive into the junior or senior classes only such students as hold certificates of having passed a satisfactory examination in the studies of the freshman or of junior years respectively; this certificate to be a pledge to any college to which they may apply that a previous year has been properly spent in the institution. (Chicago, 1885; changed, Saratoga, 1891.)

Resolved, That applicants for admission to advanced standing from foreign countries shall be required to furnish properly attested evidence of study, attendance upon lectures, etc., the same as required of applicants here; and they shall pass the intermediate examinations. (Chicago, 1885; changed, Saratoga, 1891.)

FORM OF INTERMEDIATE CERTIFICATE.

Place..... Date.....

This certifies that.....has been a member of the
.....class in the.....college during the
session of.....

He was examined at the close of the session in the studies required (as follows), and is entitled to enter the..... class.

Attendance.....

Freshman Year.

a.....
 b.....
 c.....
 d.....
 e.....

Junior Year.

a.....
 b.....
 c.....
 d.....
 e.....

Each student completing a regular course in any college of this association must be furnished with the above certificate, without which he shall not be accepted by any college for admission to the advanced class, except by conference with and consent of the school from whence he came. (Chicago, 1885; changed, Saratoga, 1891.)

Resolved, That the dean of each school shall upon request furnish the executive committee with the exact character of the intermediate examination held in his school, and whether or not the examination is final. (Niagara 1886; changed, Saratoga, 1891.)

ATTENDANCE.

Resolved, That candidates for admission to the colleges of this association, who are undergraduates in a reputable medical college, may be admitted to the junior class subject to the rules of examination governing admission to that class.

Resolved, That no college shall give credit for a full term to any student who has entered later than twenty days after the beginning of regular lectures. (Chicago, 1885.)

Resolved, That no college of this association shall admit a student after twenty days from beginning of regular term, except those colleges having a term of more than five months, and that they shall have an extension of time in proportion to the length of term. (Niagara, 1886.)

Resolved, That attendance upon three full regular courses of not less than five months each in separate years shall be required before examination for graduation. (Saratoga, 1889.)

GENERAL.

Resolved, That the fees of all dental colleges, as far as possible, be uniform. (Chicago, 1885.)

Resolved, That the members of any faculty belonging to this association may take part in its discussions, but only the delegated representatives shall vote upon a question before the association. (Niagara, 1886.)

Resolved, That dental schools which do not conform to the regulations of this association shall not be recognized by the association. (Niagara, 1886.)

Resolved, That a standing committee on schools be elected, whose duty it shall be to ascertain as far as practicable the workings of all dental schools in this country and Europe, and be required to furnish information to the dean or secretary of any college when desired, and to report in writing at each meeting of this association. (Niagara, 1886.)

Resolved, That we agree to adopt a graded course of instruction and an intermediate examination between each course, which course of instruction and examination shall be conducted as the faculties of the different colleges represented in this association may deem proper. (Saratoga, 1884; changed, Saratoga, 1891.)

Resolved, That no charges against any faculty shall be reported to the association by any committee before both parties interested have been notified, and an opportunity given for a hearing before said committee. (Washington, 1887.)

Resolved, That as a matter of courtesy, when a student leaves one school to go to another, the dean of the second college shall write to the dean of the first college, inquiring whether there may be any objections to the transfer; this to be done whether the student presents a certificate or not. (Louisville, 1888; changed, Saratoga, 1891.)

Resolved, That hereafter a delegate representing a college in this association shall be a member of a teaching faculty, and shall present credentials from the college to which he belongs, legally authorizing him to represent his college before he shall be entitled to vote. (Louisville, 1888.)

Resolved, That it shall be obligatory upon the dental schools belonging to this association to publish the names of all their matriculates and graduates of the preceding session, with the States and countries from which they come, in their regular annual announcement, and that an asterisk (*) accompany the name of each person not in attendance, and the words "not in attendance" be placed as an explanatory foot note at the bottom of the page.

Resolved, That the degree of Doctor of Dental Surgery shall not be conferred by any college belonging to this association honorarily, except by the consent of this association. (Saratoga, 1889.)

Resolved, That the term anatomy shall be interpreted to include didactic and practical anatomy, and that in the latter at least two parts of the cadaver shall be dissected in some regularly appointed anatomical department. (Excelsior, 1890.)

MEMBERSHIP.

Resolved, That all applications for membership in this association shall be made in writing, and referred to the executive committee. (Niagara, 1886.)

Resolved, That applicants for membership in this association shall be regularly incorporated dental colleges or departments of medical colleges or universities, wherein at least one full course of lectures has been delivered, and that such dental colleges or departments shall have been in existence at least one scholastic year. (Washington, 1887.)

Resolved, That no application for membership in this association be reported to the executive committee, unless received at least sixty days before the regular meeting. (Washington, 1887.)

Resolved, That all applications for membership reported upon favorably by the executive committee shall lie over one year before final action may be taken thereon. (Saratoga, 1889.)

Resolved, That we recommend that students take two full courses in studies of a general character, such as anatomy, physiology, chemistry, general principles of surgery, materia medica, and therapeutics, and three courses in those of a special dental character. (Excelsior, 1890.)

Recommended, That for a full course of lectures the minimum sum of college fees be \$100.00. That diploma fees may be omitted, and an examination fee of not less than \$25.00 be substituted therefor and made non-returnable; that a matriculation fee of \$5.00 be charged annually. Special course fees to be \$10.00 for each branch taken, and \$5.00 matriculation fee.

The American College of Dental Surgery, Chicago, was suspended from membership for two years for violation of the rules of the association in accepting students after the prescribed time and giving them credit for a full term.

A resolution dismissing charges against the Philadelphia Dental College was adopted.

The following were offered and laid over for one year under the rules.

By Dr. Hunt :

Resolved, That in case of charges against any college no final action shall be taken until all parties concerned shall have had at least thirty days' notice.

By Dr. Truman ;

Resolved, That at all future meetings of the National Association of Dental Faculties the delegates shall consist of members of faculties, and demonstrators will not be received.

By Dr. Fillebrown :

Voted, That after June, 1893, the yearly course of study shall be not less than seven months of which may be attendance upon clinical instruction in the infirmary of the school, now known as intermediate or infirmary courses.

By Dr. Hunt :

Resolved, That after the session of 1892-93, four years in the study of dentistry be required before graduation.

Dr. Door offered a resolution that students who have successfully passed their examinations for advanced standing shall have their certificates given or mailed to them within thirty days after such examinations shall have been completed. Adopted.

The following officers were elected for the ensuing year : W. H. Eames, St. Louis, president ; J. D. Patterson, Kansas City, vice-president ; J. D. Patterson, Kansas City, secretary ; H. A. Smith, Cincinnati, treasurer ; J. Taft, A. O. Hunt, and Frank Abbott, executive committee.

The president appointed the following standing committees : Ad Interim Committee, James Truman, Frank Abbott, and Thomas Fillebrown ; Committee on Schools, D. R. Stubblefield, J. A. Follett, J. Lewis Howe, J. E. Cravens, S. H. Guilford.

Adjourned to meet at the place of the next meeting of the American Dental Association, on the Monday previous, at 10 o'clock A. M.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.

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AMERICAN DENTAL ASSOCIATION.

The thirty-first annual meeting of the American Dental Association held at Saratoga Springs, N. Y., last month, was one of the best in its history. As a rule, the sections are anxious to be passed for want of preparation or suitable papers, while this year, each section was not only desirous to be called, but when called each had a large number of interesting papers to present. As a matter of fact several papers were withdrawn by the essayists for want of time to have them read and creditably discussed.

A move in the right direction was made when it was decided to place the strictly business part of the Association's work into the hands of an Executive Council. This plan so long in vogue in other scientific organizations found favor only recently among dental societies. In all of those where it has been adopted the plan has worked to entire satisfaction.

THE DENTAL CONGRESS OF '93.

From what we can learn on all sides, the great meeting of '93 is certain to be one of unmeasurable value to the profession. The plan of State Committees is now fully inaugurated. A committee consisting of from three to seven of the best men in each State and Territory has charge of dental affairs, in their relation to the Congress. These committees make quarterly reports and judging from these reports an unusual amount of interest is taken by the pro-

fession at large in the success of the Congress. Certain it is, that America will be well represented, and that Americans will do their share.

GOLD FILLINGS, BANDS AND CROWNS, AND THEIR RELATION TO THE FRONT TEETH.

At the late meeting of the American Dental Association, Dr. Corydon Palmer, of Warren, Ohio, a practitioner of more than half a century, feelingly pled for a discontinuance of the rapidly growing disposition to place large masses of gold into prominent positions, in or upon the front teeth. Any observing person has undoubtedly noticed that Bridge work has led to the banding and disfiguring of the anterior teeth in a degree which threatens a marked change in the appearance of the people. We are inclined also to believe, that for the sake of accomplishing satisfactory results, teeth are sometimes cut off or banded that should never have been touched. It will be well if we take heed before we have done too much injury, and see if oftentimes something less unsightly than a wide band or bridge will not answer the purpose just as well. Study methods of bridge work which will combine utility and stability without too much disfigurement of the features. This is also to be a consideration when crowns are in question. Undoubtedly a crown with a band is the best crown we have, but it is not necessary that the band should be so wide as to at once indicate that the tooth is artificial. Large gold fillings in front teeth, we might say, are "out of style." There is a point where it is difficult to determine whether it would be best to introduce a gold filling or whether to cut off the remnant and crown the tooth, and good judgment should be exercised here to do that which will be most serviceable yet not too unsightly. For extremely large labial fillings in the anterior teeth porcelain inlays are admirably adapted and should be used. By a judicious combination of art technique with an endeavor to produce something useful as well as beautiful, the dentist will be led to avoid the exposure to sight of gold whenever possible.

THE COLLEGES.

Before another issue of the DENTAL REVIEW appears, the thirty or more dental colleges of the United States will have opened their

doors for the reception of students of whom probably four thousand will be enrolled this year. We urge preceptors and such others who have the intermediate care of students to insist on a prompt attendance at the opening of the session, and an uninterrupted attendance throughout the course. Many students who avail themselves of the full limit allowed until they *must* attend will find that they have missed some of the most important things embraced in the first lectures of the course.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

To the Editor of the Dental Review :

DEAR SIR.—July is an off month for New Yorkers, so the dentist catches on and plans for his outing, a wise thing to do, for there is no class of workers that more need a change; that is it, a change. That is what does us so much good in getting off. We are diverted, and nutrition gets a more normal action. We feel better and are better and are able to do better service. We start in for this month's letter on reduced energy; we are not gone yet, but we are *almost* gone. Long letters, if not very interesting, are like some Presidential address we have heard. This reminds us of one of the shortest and best speeches made by a newly made President of a Dental Society. We will run the risk of putting it into print. Dr. H. E. Knox, of San Francisco, was elected as presiding officer of the city society. He was called out for speech. After a little hesitation and blushing he got up and said in a decided manner, "I have been an Kn-ox forty years, and I do not propose now to make an ass of myself," and sat down amid a round of the most boisterous applause. That speech will be remembered long after he may be forgotten. That word "forgotten" sounds doleful in one way of looking at it, but it is a fact that will not go out of sight. The editorial words in the July number were timely; "Saying kind words of each other while living; especially of the older ones." We say "Amen" to that. The resolutions of the first District Society relative to the character of Dr. Atkinson are thought timely, also. They are much to the credit of the committee. They do justice to the Dr.'s memory. They will give a truthful idea to the reader, "after many days;" we commend them

to all who will appreciate a faithful portrayal of an unusual character.

My first call upon a "female" dentist was decidedly a pleasant one. Miss Dr. Weyman met me in her cosy apartment office, Madison avenue, very cordially. While the servant had gone to announce me, I took in the tasty arrangement of many articles of varied forms, which contributed much to the cheerfulness of the surroundings of a dental office. I fancied, however, that things did look more like the work of a woman's house than that of a man's. Nevertheless, there was the inevitable chair, of latest pattern, engine and ditto. Neatness and order were complete. Of course, we say, it should be so, but why here any more than in the office of a man? All men are not gentlemen. To be a successful practitioner a woman must be a lady, and here we found her so. Young, bright, and good-looking, of a Jewish type, well-educated. Her classical teachings were gotten at Cornell and her dental at the Pennsylvania Dental College, not having private pupilage. Now after a practice in New York of a little more than five years, she is uniformly employed by women, children and men. We judged by the conversation that she is possessed of good business tact. She thought that fees of about \$5 or \$6 an hour were all that were due her, yet there were others in the city who could get \$10 or \$12 on account of their larger experience. Ultimately, she herself could do the same. She does not hesitate to call the attention of her clients to the matter of expense; in fact, she thinks it not only wise but best. This she deems a simple matter, and one about which there need be no delicacy. It is easy to say, you have a good deal of service needed, and some that is complicated and difficult. This leads to further conversation which results in a satisfactory adjustment, not necessarily taking practice by the "job," but only with an approximation to price. It impresses one that if a woman dentist can conduct a practice successfully on this basis, others might learn a helpful lesson from it. Dentists are very impractical, many of them, and we are satisfied from our own experience, unnecessarily so. Practitioners who only keep up a business by filling a tooth and scraping off fifty cents worth of "tartar," will gain no advantage from this line of thought; but there is a class who are advocating the absolute importance of taking care of the teeth with a view to their longer preservation. To meet the thought of a large proportion of people who have

followed the smaller view, it becomes a duty to intelligently instruct them that it costs more to save teeth than it does to fill. While it is a duty to do this, it will be found not so easy to bring every one to accept the greater cost of *larger* service, involving more time. There will come a time when more people will seek the practitioner who advocates saving teeth *more* than filling teeth.

This should be the aim of the coming practitioner—to be fitted to fill such a demand. This will call for a broader basis of education, and he will approach a patient as a “physician” and he will ask himself, “What shall I do to save these teeth?” and then, what does the case say to us? As the teeth are special organs attached to the body, it will be important to consider how much the improved state of the teeth will depend on this. Again the old query: Is a dentist a doctor? Yes, so far as he applies the healing art with intelligent conscientiousness. To this end we are seeking higher attainments. Sometimes it is manifested as though it were an assumption to advocate the larger culture. Yet one must have the courage of his convictions, for some one must do the push and the pull, and sincerity and earnestness will only keep it a going. There can be no progress without them both. Dr. Freeman’s notes in the July number, on the use of soft, or non-cohesive gold for cervical margins, claims more safety against returning decay. This recalls Dr. Carroll’s remarks at a previous Kansas meeting. He claimed that the reason of returning decay at these points with cohesive gold was that the gold was in an *electrical* condition, and further that *cohesion* meant *electrical*. Many practitioners know that we do see returning decay, oftener at the gum line with cohesive gold than with non-cohesive. This is a good point to dwell upon. We recall a fact, observed in 1869. At the gum line of a bicuspid tooth, beautifully contoured by the late Dr. Vamoy, the operation being two years old, there was a well defined space between the gold and the tooth, which if it had been cut with a saw, could not have been more perfect. From then until now, the impression has followed us that there was an intelligent reason for this. Now if the meaning of cohesion is *not* electrical, let some one that is intelligent in this line tell us why. If it is, give us all the information possible. We think it reasonable that there may be a grain of truth here. We are inclined to believe that good operators who use much non-cohesive gold at the gum line or margins, have practical intelligence on their side.

These things are worthy of our best attention. It has often been observed that many of the old-fashioned "stuffed" fillings did preserve teeth marvelously well. These were made with non-cohesive gold and burnished vigorously. Just here we will emphasize the value of the burnisher, then and now. Dr. O. E. Hill, Brooklyn, *once* said a good thing. "The burnisher was one of the most valuable instruments in our case." And now that we have the revolving and corrugated one for the engine, its value is enhanced. Since Dr. Herbst's visit to this country, more practitioners have discovered this fact. Some things we need to be reminded of lest they slip our minds.

Here's another. Aluminum probes and dressing needles, introduced by Dr. Carroll (and a good deal for the money which pleases many), are non-corrosive, hence their value.

Another note worthy of attention which Dr. Holmes' paper on the first and third molar, in the July number, suggests, is, when to remove the sixth year molar, if it is to be removed for the betterment of those remaining. The late Dr. Riggs proved by many models that at the appearance of the bicuspid was the proper time. We have seen by this practice that he did secure a good position of the remaining teeth. We are convinced where many are relieved of this molar it shows dire results, and that it is from the lack of intelligent discrimination. That there are cases that call for the removal of this molar, there is no doubt, but I do not think they are very frequent. I have with many seen the appearance of first-class developed third molars, where the first has been removed, and often it is seen to be quite as large as its associates; yet it requires more wisdom to decide in these matters than is often found in the third molar.

The joint meeting of the Pennsylvania State Association and the New Jersey State Association, at Asbury Park this month was a cordial affair, well attended, and manifested a unity of purpose in giving earnest latitude to both discussions and clinics. There was a liberal deal of both. The dealers were out in full feather. There was no lack of attention to all efforts of object attention, as these clinics always are to the open-eyed. A large enthusiasm was manifested over an extensive crown and bridge work in the mouth of Dr. Dwinelle, made by Dr. C. M. Richmond. It was acclaimed on all hands a pronounced success, and reflected much credit on the doctor. The upper piece extended from the twelve

year molar to the cuspid root and then spanned to the next twelve year molar. The uniqueness of this work was its ease of removal. Its ability for service was duly tested on the rich steaks, daily provided at the hotel. Dr. Charlie Butler said this work alone was well worth a visit from Cleveland to see. It is regarded by all as truly an anomalous piece of work, showing what can be done under a severe stress of circumstances. We regard such a service as this is proving, outside of price. For a person of Dr. Dwinelle's demands for proper nutrition, such a masticating apparatus puts the Dr. far on the road to better living. The under piece was confined to two teeth and a perfect living tooth in situ and the other so coped and mechanized as to retain its vitality; one a bicuspid on the right side; the other a cuspid on the left.

The meeting at Heidelberg of the American Society, has lured away from our shores Drs. Jarvie, Merick, S. G. Perry, Prof. Darby and brother, and N W. Kingsley, President of the First District Society, and we give them a *bon voyage* and a safe return.

Dr. J. W. Clowes, of Fifth avenue, has astonished his many friends by coming to the front with a stupendous move in the amalgam line, which if models indicate what he is doing, he has the courage of his convictions. He is building what he terms causeways as supplies for masticators, where lost, intermediate and single teeth, etc. The models show artistic work, and we are promised a view of practice work as soon as the patents can be at command. The Dr. says it is quite three years since he began to move in this direction, and it is eighteen months since he saw victory smiling him in the face of his patients. Any one desiring illustrated showing of this work can be furnished with a copy from the *Scientific American* publishers, New York, which will tell that patents are secured in both this country and England. That is the style when one has a good thing, he thinks he knows it. Dr. Clowes has always been blest with a good natured face, but we never saw it so radiant as now. It is well-known that he has used amalgam for over forty years; so what he does not know about the article cannot be found in books. The Dr. is not fully decided respecting the future purpose of his move with this intention. This work differs in its application from what is understood as "Bridge work." It is built to set tight in contact with the gum, in connection with a frame work on which he builds his plastic work. How he form his crowns so artistically we do not know. In this connection we are

going to publish a method of forming amalgam crowns. We have never seen or read of any method like the one that we here describe. We send it out as something new. We'll see something new, perhaps. We will publish it, and then we will know how many have done the same thing. "Amalgam tips or crowns for building up the remains of natural crowns and sections, etc." Take an impression of a single natural crown or section from good forms of teeth, and in this, be it plaster or composition, mould amalgam with a ball burnisher or other convenient way one may desire. Set away until hard and then prepare the base intended for the tip; place a matrix entirely around the base and bind by a wire twist. Place your amalgam paste within, and then set your tip and let the patient bring the teeth together for a normal occlusion; after which trim sufficiently for a comparative finish, then protect in your own way the operation until hardened, then by corundums and polishing disks you have an artistic and useful piece of work. Sections of three teeth or more can be placed this way with contiguous base for placing them.

NEW YORK, July 1891.

EX.

"PICKING HIS WAY WITH AN AX."

To the Editor of the Dental Review:

Dear Sir:—I am a practicing dentist, and in my day, have extracted more than 5,000 teeth. For the first time in thirteen years I was obliged to submit myself to this operation to-day. I have drawn some lessons from the experience, and hence desire to relate the circumstances. My teeth were in good condition when I left college, a number of roots had been taken out, all cavities were filled, and—unfortunately—a plate carrying three or four teeth had to be inserted and worn; at any rate, the mouth was in good condition. Since then my plan has been to have my teeth examined, and kept in order by the very common practice prevailing among dentists, "you do it for me, and I do it for you." Under this régime I have had nothing but gutta-percha and cement fillings. In an upper molar, through the carelessness of a dentist, the pulp became involved, eventually destroyed, and the last man to look at it expressed his regret that it was even beyond crowning, so the roots were filled, a cement filling covering their exposed ends. On the dropping out of this last filling I carefully examined the remnants and

concluded that the "jig was up," and "out she must come." I went to a specialist and I went *in cog*. First, I wish to inflict a statement of my experience, and then I will name the lessons I have learned. Provided with the usual card, "Please extract for Mr. Thomas the teeth marked on the diagram," etc., I entered the office of the specialist. Having presented the card it was a simple matter for him to determine the location of the member, the probable difficulties to be encountered, etc., in a few moments he was ready to proceed. Parenthetically I might say, that from experience I know that he did not have a very easy operation before him, inasmuch as the three roots (though yet united) would have to come out separately. I began to read and re-read the sign on the window: "Teeth extracted without pain," while the prop was adjusted and the administration of the anæsthetic began. I soon recognized the presence of ether in combination with the nitrous oxide. I was admonished "not to be afraid but breathe full and deep," the precaution was wholly unnecessary.

I had taken nitrous oxide "for fun" many times, and was well acquainted with both ether and chloroform, having often used them in severe nervous headaches, in years past. Knowing the operation before him, feeling full confidence in the gas and vapor administered, I at once concluded to assist the operator with all my might. In the early stages of the administration my attention became riveted on the single word "pain" on the window before me. And then passed before me a procession of the "chestnuts," clinging around the words "teeth extracted without payin'"; "that it don't 'pain' the operator to extract teeth," etc., etc. I also employed all my energy to take as much of the anæsthetic as possible, in other words, I was fighting to remain conscious and to resist the encroachment of the drug and gas. I filled my lungs full and deep. I endeavored to keep my pupils dilated and to have my eyes retain the appearance of consciousness, to keep up the eyelids and not allow my hands to drop; in fact I tried my best to oblige him to give me all I could possibly inhale and I chuckled with considerable delight when I distinctly heard him twice—at least—turning on more gas. Of course I don't know when I became unconscious. The next thing I knew I was listening to a discourse delivered by a benevolent looking old gentleman with light blue kindly eyes and a long gray beard. The subject of his conversation was the manner of getting along in this world. It seemed that he himself has

had a difficult road to travel, his path was strewn with thorns, but he evidently had considerable determination to get along. Pretty soon, in the course of his conversation, I became aware of the fact, that he intended to impress on me forcibly the point of his remarks, and the next thing, to my astonishment, I find this nice benevolent old gentleman "picking his way with an ax"—*through me*. I could not quite understand his purpose, though I was quite conscious of what he was doing. I concluded that the location which he desired to reach with his "ax" was the interior of the cranium. I soon realized that he had safely passed through the soft tissues and was now at work pretty well up in the superior maxilla and had evidently struck a root which he had to get out of the way, and while he kept constantly muttering about his method of "picking his way with an ax," I noticed he had discarded that tool and was using something more like a chisel.

I distinctly heard the pieces he had chipped off falling into my mouth. I then became satisfied that this was the last act through which I would pass in my life, for I was sure the end was near. While quite willing to let him go ahead in his own manner of "picking his way," I thought how much simpler it would have been had he picked his way in from the outside of the skull. I knew very well that he intended to puncture a certain part of the cerebrum and thus destroy life, but I could not comprehend his object to have a root of a tooth gotten out of the way so he could enter the antrum and then pick his way on the other side of it up into the cranium. While musing on this intricate point, to my astonishment he ceased operations when the root was out of the way, and the next thing I noticed was a spittoon in my hand into which I was spitting blood, and a gentleman who had found two roots on the floor and was diligently searching for the third one which was also found.

One lesson I had drawn from this experience is that the determination of the operator to succeed was admirable and that it must be exactly this quality which is essential in men who have any operations of this kind to perform, and it also occurred to me that dental specialists are to be encouraged, that the practice of performing similar operations daily must make one more perfect and hence able to give better satisfaction and to gain better results. That a man who constantly employs anæsthetics for minor operations finally becomes so well acquainted with its effects as to accomplish

the most with them. I apprehend that much of the opposition to the use of anæsthetics is due to the disinclination of most dentists to "bother with it."

Another important lesson I have drawn is in regard to the teeth of dentists. I would suggest that dentists relate their method of having their own teeth cared for. Have you a regular dentist, and does he give you such satisfaction as you try to give most of your patients? I have had so much make-shift temporary work done that I am satisfied that my teeth have been injured and improperly cared for. At any rate, the gold fillings of my fellow students in college, have outlasted all the work done since.

Now the question arises, what will a man do who is well acquainted with such men whom he would trust, but who will not do permanent work, and when they do it, seem so "rattled" that they do not accomplish the best. It is my intention hereafter to have my work done *in cog.*, believing that a much better plan than to be put off with temporary stuffings, leading to disastrous results. I should be pleased to know how my professional confrères dispose of this matter.

AUGUST 21, 1891.

"MR. THOMAS."

WISCONSIN STATE DENTAL SOCIETY.

To the Editor of the DENTAL REVIEW.

SIR:—I will keep the promise made you to report important features of the twenty-first annual session of the Wisconsin State Dental Society, although I cannot represent in a letter the actual merits of the work accomplished as the greater portion of the session was taken up with a spirited discussion of practical every day experiences in the use or application of methods and principles drawn out by papers read. For instance, Dr. Chittenden's paper on the enlargement of root canals and the dangerous interference with drills and burs was but a "fulminate" to the half day's bombarding of every condition and species of nerve canals known to exist, and which was much more interesting and instructive by lantern illustrations in the hands of Prof. Weeks, of Minneapolis; or Dr. Claude Southwell's "I would suggest," did suggest until the *choking* process was applied. Dr. R. G. Richter, of Milwaukee, got right down to work this year and gave us "Some of the peculiar phases of the after effects of la grippe." A very interesting paper. Dr. M. B. Jennison, of Minneapolis, entertained the society

with an illustrated lecture on the advantages of charts, models and photographs as a means of illustrating ideas and facts in the education of patients or students, or making more clear our addresses and essays. Dr. Geo. H. McCausey gave another evidence of his devotion to the development of the hidden facts in the structure of enamel, dentine and cementum, by a lecture illustrated by numerous lantern slides of great value and interest. Other papers were presented by Drs. Dolbalre, French and Palmer, and discussions followed. A half day was given to clinics.

Unfortunately no reduction of rates on the roads could be obtained and the attendance at Eau Claire was small, but everyone present enjoyed the occasion immensely. The next meeting will be held in Milwaukee and the new officers and committees swear by all the energies they possess that it must be made creditable to this great State.

The officers are: President, E. C. French, Eau Claire; First Vice-President, W. C. Wendel, Milwaukee; Second Vice-President, F. G. Van Stratum, Hurley; Secretary, Claude A. Southwell, Milwaukee; Treasurer, B. Douglass, Appleton.

The State Board of Dental Examiners held a busy session with six applicants for license. Drs. Chittenden and Palmer being for the seventh time elected respectively president and secretary of the board at this meeting.

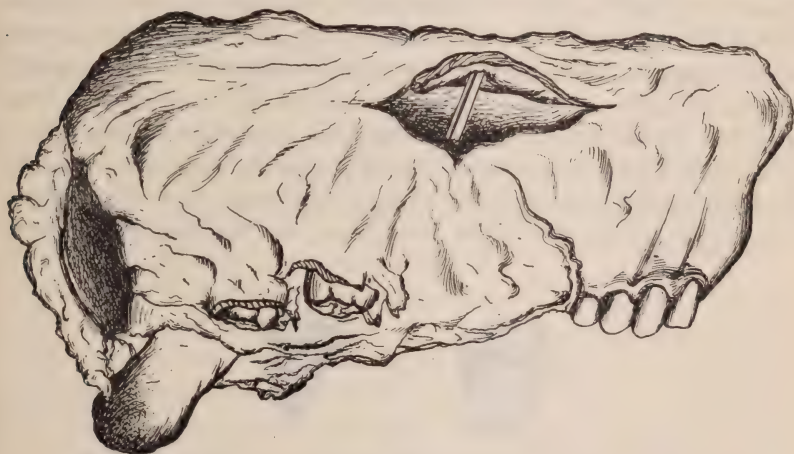
REVIEWS AND ABSTRACTS.

MAXILLARY CYSTS CONNECTED WITH THE TEETH.

BY LUDVIG HEKTOEN, A. B., M. D., Professor of Pathology in the Post-Graduate Medical School of Chicago, Lecturer on Pathology, Rush Medical College, Pathologist to Cook County Hospital.

The specimen of the comparatively rare form of neoplasm known in English and American literature as dentigerous cyst, which is about to be described, was given me for examination and diagnosis by Dr. A. B. Strong, late Attending Surgeon to the Cook County Hospital, and it is at his request that the first case is here reported in its entirety. In connection with this I desire to express my thankfulness to Dr. Strong for the opportunity to examine the growth and for the invitation to publish the case.

The clinical history of the patient from whom the tumor was removed, as well as the description of the operation as furnished by the Doctor, are briefly as follows: The patient was a man 28 years old and in good general health. When two years old he had some difficulty with a tooth on the same side of the lower jaw as the present tumor; at the age of four this tooth was extracted by a dentist. For an indefinite length of time after this there would be a periodical discharge of some kind of matter from this point in the jaw. This finally ceased, and then a gradual and painless enlargement of the left half of the lower jaw was noticed, but the growth of this enlargement was extremely slow, until three years ago, when it became more rapid, and for the last nine months the swelling has increased more rapidly than at any previous time. Patient does not seem to have had any other teeth extracted. At the present time, the left half of the lower jaw is the seat of a fluctuating tumor, which seems to spring



PROLIFERATING DENTIGEROUS CYST REMOVED BY DR. A. B. STRONG.

from the interior of the bone. At the posterior part a slight crackling is noticeable on palpation. The patient cannot shut his mouth completely, the front teeth remaining about half an inch apart.

December 20th Dr. Strong dissected the left half of the jaw, experiencing no special difficulty except that the condyle was rather hard to remove. The wound healed by primary union throughout the greatest extent, a small stitch-abscess forming in

the parotid region, which had to be drained later on. At the present time, two months later, the patient is as well as could be expected and much pleased with the cosmetic effect.

The portion removed consists of the left half of the lower jaw, which has been sawn through at the symphysis and disarticulated; the soft parts have been dissected away quite thoroughly. The specimen presents a much changed appearance from that of the normal jaw.

There is no sign of the coronoid process and commencing in a line with the canine tooth the body and angle are much expanded and contain many cystic cavities, only the condyle and the part anterior to the canine tooth have retained their normal size, contour and consistence. In the more detailed description it may be stated that in the alveolar border are four well preserved and apparently healthy teeth; namely, the first molar, the two bicuspid and the canine. There are no signs of the second and third molar teeth, the gingival mucous membrane bulging in all directions behind the last tooth, the first molar; the eminence thus formed rising higher than the crowns of the teeth, and would consequently prevent complete closing of the mouth. The two incisors were extracted during the operation in order to give room for the saw.

On the internal surface of the jaw, just behind the fossa for the sublingual gland, a cystic bulging commences, which extends from the canine tooth back to the molar; the walls of the cyst are



1. Uncut. 2. Longitudinal Section.

TEETH FROM PROLIFERATING DENTIGEROUS CYST.

formed by the bone above, in front and below, laterally and posteriorly by fibrous tissue. A small opening was made into the cyst during the operation so that it is now empty. It would hold about half an ounce of fluid. There are no teeth in the walls of the cyst, and it does not communicate with the teeth in the alveolar border of the jaw. Situated immediately behind this cavity

and bulging on the external surface of the body is a second cyst of similar size unopened, filled with a viscid, clear fluid containing yellow particles; this cyst is separated from the first by a thin translucent membrane, and it replaces more of the bone externally than internally. Occupying the places of the angle and the ramus of the jaw, clear up to the neck, is a large cystic cavity which would easily contain a hen's egg. The walls of this cyst seem to consist of fibrous tissue in which are thin plates of bone that crumble with a cracking noise when pressed upon or bent: along the center of the floor of this cyst runs a ridge which projects into the cavity of the cyst, so that a bulging takes place inferiorly on each side of the ridge; this ridge is formed of bone. It is a remnant of the interior and posterior border of the body and ramus of the jaws, and in its upper margin, directly underneath the lining of the large cyst, runs a groove which contains a nerve, presumably the inferior dental. In the external wall of this cyst are imbedded two large teeth, quite well developed, with broad cubical crowns, the upper surface showing five tubercles separated from each other by more or less conical depression; each tooth has a distinct neck and one root upon which run grooves, which if carried clear through the tooth would subdivide the root into three or more fangs. Cross section of one of these teeth shows a normal pulp cavity, from which extend two small canals into the end of the composite fang, showing again that the fangs had become amalgamated into one.

Behind this large cyst, corresponding to the posterior border of the upper half of the ramus, is a smaller unopened cyst about as large as a hickory nut. Lastly, in the fibrous tissue, between the mucous membrane behind the teeth, in the alveolar border and the large cyst, are many small cystic spaces or dilatations, varying in size from a minute spot to an ordinary bean. These smaller cavities contain a grayish white viscid fluid, while the large, unopened cysts contain a viscid, clear fluid in which float glistening, golden yellow particles. The walls lining the cysts are smooth, with irregular recesses, apparently dependent upon the unequal resistance offered the expanding intra-cystic pressure by the soft tissues as compared with the remnants of the bone of the jaw.

Microscopical examination of the fluid was practically negative. The glistening yellow particles were cholestearin crystals, and there were also some small granular bodies in the fluid and amorphous

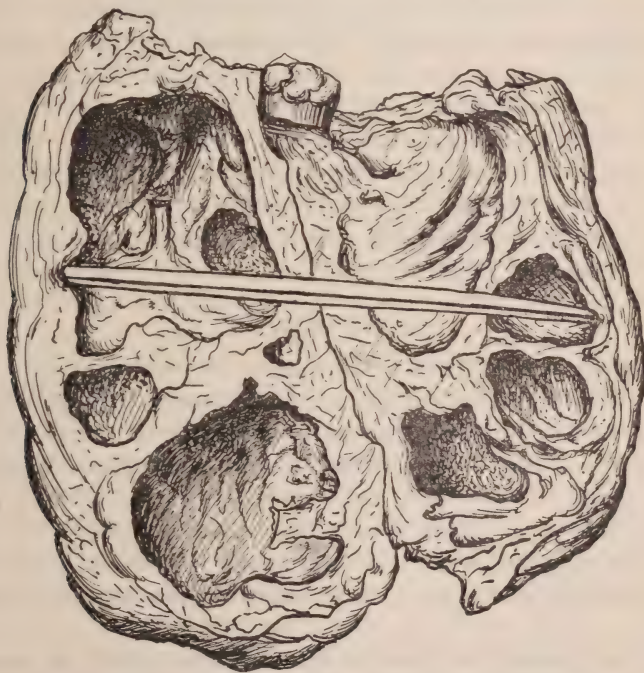
particles, but no typical cells of any kind. The tissue composing the walls of the cyst consists of normal, quite dense connective tissue, with few vessels, the internal surface being covered with a single layer of epithelial cells. The tissue composing the prominence behind the teeth is quite spongy and is made up of mature fibrous tissue, enclosing small empty spaces lined with epithelial cells.

Diagnosis: Proliferating follicular dentigerous cystoma of the lower jaw.

The second case occurred in the surgical practice of Dr. C. W. Oviatt, of Oshkosh, Wis., who kindly turned the specimen over to me for description and gave me an opportunity to personally interview the patient. I am consequently very thankful to Dr. Oviatt for his kindness.

The patient was a woman, at present forty years old and in good general health. At sixteen years of age she noticed a small swelling at the site of the first wisdom tooth on the left side of the lower jaw; this swelling was painless and of slow but gradual growth; at seventeen years she was accidentally struck on the left half of the lower jaw and the swelling then got "hot and inflamed" and was painful; at twenty this swelling was incised through the mouth and the doctor had to break through the bone before he could get into any cavity; through the opening thus made a molar tooth was removed. From this time on until she reached the age of thirty-two, when she came under Dr. Oviatt's observation, the swelling in the lower jaw would increase in size periodically and then matter would be discharged and diminution in size would follow. In the mean time all the teeth in the left side of the lower jaw were extracted, one by one, but with no effect on the suppurating swelling, which slowly increased in size and continued to suppurate, thus rendering the patient very miserable. When Dr. Oviatt saw the patient eight years ago, there was a cylindrical hard tumor which seemed to grow from the interior of the body of the jaw; there was no cracking in the walls, no fluctuation, but there were fistulous openings in the alveolar margin at the site of the molar teeth discharging pus. The left half of the lower jaw was then excised and while sawing through the ramus the saw was broken on a tooth which lay impacted in the substance of the bone. The patient made a prompt recovery and has had no further trouble with the jaw.

The specimen, which has been kept in a dilute solution of alcohol for eight years, consists of the expanded body of the lower jaw; it is $3\frac{1}{2}$ inches long; irregularly circular in outline; a little flattened from above downward, the external border convex, the internal concave; it measures four inches in circumference at the thickest portion. Anteriorly it is tapering toward a sharp point, being cut squarely through, and in this end it can be seen that the interior is made up of spaces; at the posterior extremity is an opening into a large cavity and in the soft tissues surrounding this opening lies a tooth; it is an imperfectly formed molar tooth, the crown being apparently normal but the root short and rudimentary, consisting of an amalgamated fang. There are no teeth in the alveolar border of the excised portion; but near the



PROLIFERATING DENTIGEROUS CYST REMOVED BY DR. C. W. OVIATT.

posterior end of the border is a small opening which passes downward into the cavity. The external wall of the specimen consists everywhere of quite firm bone, except near the anterior end where the bone is thin as parchment but *craquement* cannot be

produced. On sawing through the bony wall along the external convex margin, and opening the specimen after the manner of a tobacco box, it is seen that the interior is made up of many cavities, with quite smooth walls, of irregular size and shape, the largest being situated at the posterior end and as large as a walnut, while anteriorly are some the size of a pea; some of these cavities do not communicate with each other and are perfectly independent; others again do, and in the latter instance anfractuositities in the walls indicate that the communication has been established by gradual atrophy of the intervening partition. The opening in the alveolar margin passes down into a large cavity. The lining of the cavities or spaces consists of soft tissue and there is very little bony substance in the partitions between the spaces, and the bone thus situated is always connected with the external wall of the cystoma. The external wall is of quite uniform thickness, about one-fifth of an inch; near the anterior end it is thin and translucent. Microscopical examination of the soft parts showed no characteristic structure, presumably on account of the age of the specimen and the vicissitudes the preserving medium was subjected to. The diagnosis, however, seems definite enough, namely as in the first specimen; proliferating dentigerous cystoma of the lower jaw.

ETIOLOGY.

No bone in the body is so frequently the seat of cysts as the maxillæ, and this frequency of cyst formation in this locality must be attributed to the fact that in the alveolar border of the jaws develop the teeth, and morbid changes after their maturity as well as disturbances during their development often give rise to the growth of cysts which in some cases may replace a large part of the bony portion of the affected jaw. Thus Koenig states that the majority of all the cysts in the maxillæ are connected with the teeth.

Magitot divided the cysts of the jaws that could be traced to have any connection with the teeth into two kinds: the periosteal and the follicular. It will be seen further on, that the follicular cysts are again divisible into simple or unilocular and proliferating or multilocular. Of the two varieties of cysts, the periosteal seems by far the more frequent. Haderup studied 64 cases of maxillary cysts in 56 patients, and of these 50 were periosteal, 10 follic-

ular, and 4 seemed to have no connection with the teeth at all. It is, it appears, quite common experience for dental surgeons to find small cysts connected with the fangs of permanent teeth, without having caused any symptoms; at times, however, these cysts grow to a considerable size and give rise to prominent swellings by absorption of the alveolus. These cysts were considered by Dupuytren to be due to disease of the root of the tooth, because the root is usually found diseased in such instances. Magitot called this variety of maxillary cysts periosteal, because he considered them due to inflammatory changes in the periosteum around the root, as a result of which fluid accumulates beneath the loosened periosteum between the apex of the root and the bottom of the alveolus. As a sequence of the pressure of the constantly increasing fluid, gradual atrophy of the bony wall of the alveolus takes place, the cyst thus formed reaching in some instances a capacity of from one to three ounces. Haderup was led to believe that the periosteal cysts of Magitot are due to the development of small, soft fibromata at the root of a necrotic tooth, central softening taking place, and he calls these cysts simply teeth-root cysts. Other modes of origin of the periosteal cysts have also been described. For the purposes of pathological diagnosis it is well to bear in mind that in the periosteal or teeth root cysts the root of the tooth always projects into the cavity of the cyst, the tooth being normally located.

The follicular variety of the maxillary cysts are true cystomas, arising apparently on account of misplacement of a dental matrix, and subsequent impaction of a more or less full grown tooth or teeth, and in this way they consequent illustrate Cohnheim's theory of the origin of tumors. This variety of cyst is found in connection with misplaced teeth in all parts of the maxillæ, developing at or near the places where the teeth naturally form, or it may be heterotopic, having been described according to Koenig, in the palate bone, in the orbit, and in the angles of the lower jaw. It is most frequently connected with permanent teeth, the tooth or teeth being, as in the case just described, normal in presence and serial character, but misplaced. They may, however, result from an impacted supernumerary tooth, and in one or two instances the cysts have been traced to temporary teeth. Haderup is quoted in the *Universal Annual for Medical Sciences* for 1890 (Vol. III, Section J, in the article on Oral Surgery), to

the effect that follicular cysts are usually found in children in connection with the milk teeth; the statement, if it be correctly quoted, is at direct variance with the recorded observations of all other authors.

As these cysts do not form after the corresponding tooth has pierced the gum, but only while the tooth or teeth are imbedded in the bone, it will be interesting to briefly refer to the conditions which may prevent the eruption of a tooth. Salter enumerates the three following: The tooth may develop too deep in the body of the jaw and, though it grow in a right direction and in a right place as regard the series, yet it will never reach the alveolar margin; or, it may be sufficiently superficial, but taking an oblique direction of growth, it comes to lie covered more or less in the axis of the bone; or, again, the position of the tooth and its line of growth may be originally normal, but from arrest of development of the fang, it may nevertheless fail to reach the alveolar edge and so remain permanently imbedded in the substance of the maxilla. Koenig speaks of the fact that the normal eruption of a successional tooth may be impeded or prevented entirely by the refusal of the temporary tooth to give way, or by abnormalities in the jaw causing diminution in the space in the alveolar border. As already stated, the displacement of the embryonal dental matrix may be so marked as to lead to the development of teeth and cysts in the palate bone and in the orbit. It must be recollected, however, that the embedding of a tooth in the jaws or in any of the bones of the face does not necessarily result in the growth of a cyst, because such misplacement is not so very uncommon according to Salter, whereas dentigerous cysts are quite rare occurrences.

Before entering into any details concerning the development of the cyst, a brief reference to dental embryology will, perhaps, make the subsequent statements plain. Commencing about the second month of foetal life, the dental groove forms in the gum; this groove is soon filled with epithelial cells, and then it forms the enamel organ; this epithelial mass constituting the enamel organ passes downward deeper and deeper into the substance of the jaw until it meets a conical papilla, the dentine germ, which grows upward from the mucous tissue of the embryonal maxilla, and over this papilla the enamel organ folds itself like a cap or capsule. As little by little the parts of the enamel organ lying between

and uniting the various dentine germs disappear and gradually the connective tissue forms a sac or follicle surrounding the single papilla or dentine germ and its enamel organ. The epithelial cells of the enamel organ lying next to the dentine germ form the enamel prisms of the crown; the external layers form the *cuticula dentis* or Nasmyth's membrane. This mode of development is the same for both temporary and permanent teeth; during the development of the milk teeth a special enamel organ is formed near them, but it does not undergo development until the milk teeth are shed. After the eruption of a tooth the *cuticula dentis* is soon worn away from attrition against the opposite tooth as well as during mastication.

Now, according to Salter, Heath, Tomes and others, when the tooth sac is misplaced and consequently impacted, then fluid may accumulate between the cuticula dentis and the crown of the tooth distending the tooth follicle into a cyst, lined with epithelium and containing in some part of its wall, or, more rarely, free in its cavity, a more or less completely developed tooth or even teeth. But this view does not explain the origin of those cysts which contain only irregular pieces of enamel, or no trace of mature dental tissue at all where the growth of the cyst must have commenced during the embryoplastic period of tooth development. In order to obtain a satisfactory explanation of all the follicular cysts we must assume that they are true cystomas, true neoplasms, resulting from the growth of a matrix destined to form hollow spaces, and that this matrix is particularly and especially stimulated to growth when there has been some displacement of the embryonal tooth; further, that a follicular cyst may develop from the follicle of a nearly full-grown tooth, or from the sac of a developing tooth, or from the germs of the enamel organ, but in all these cases it is principally either remnants of or tissue derived from the enamel organ or pulp that is concerned, because it is hardly possible to account for the epithelial cells lining the cyst in any other way than as derived from the enamel organ, which is an epithelial structure. It has been thought that from the condition of the dental structure proper found in these cysts some conclusion could be reached as to the time when the cyst began growing.

Thus Koenig says that a cyst beginning to grow during the embryoplastic period of the development of the tooth follicle, only small hard plates would be found in the cyst wall, while in cys-

toma beginning at a later period more or less completely developed teeth would be discovered. While this is true in so far as the presence of rudimentary enamel plates would undoubtedly indicate that the cyst commenced early in the history of the tooth follicle, I cannot understand that more or less normal teeth must indicate a late origin for the cystoma, because I can see no reason why the growth of the cyst should necessarily prevent the germs destined to form the tooth from becoming mature tissue. The clinical history of the cystoma first described indicates that the cyst began to grow at a very early period of the development of permanent molar teeth, at least before the period of crown and root formation, and yet the cyst contains two fully developed though malformed molars.

In the multilocular or proliferating variety of dentigerous cysts a new and important element is introduced, namely, proliferation giving the tumor the power of unlimited extension. These tumors differ in no way from the proliferating cystomas of the ovary or the breast, and the specimens described are pregnant examples of this variety of dentigerous cysts. Magitot thinks that the formation of the new cysts is due to bulging at certain points, the neck of which becomes narrow and finally by contraction and constriction of this isthmus the bulging part becomes separated from the main cyst and thus a new cyst is formed, or two or more follicles may simultaneously become the seats of cysts. Falkson calls this variety, *cystoma proliferum folliculare*; in the case described by him, the tumor exhibited many cysts with an intervening alveolar tissue; the alveoli were lined with a single layer of epithelial cells and the interior of the alveoli was filled with a delicate tissue composed of cells with long processes forming an intra-alveolar net work; from this he concluded that his cyst, which reached the size of a child's head, was derived from a supernumerary or misplaced enamel organ or its matrix to which the alveolar contents as well as lining wall would correspond. This is an apparently isolated case, the matrix remaining latent long before it underwent pathological development. Besides this adenomatous proliferation of the epithelium of enamel pulp, giving rise to multilocular cystomas, Orth states that Bruns has observed this epithelium giving rise to carcinoma; the development of such carcinomas would be analogous to the growth of branchial carcinomas in connection with branchial cysts. The multilocular, proliferating

maxillary cysts are much less frequent than the simple follicular variety.

To recapitulate: There may develop in the jaws periosteal or teeth cysts connected with the fangs of diseased teeth. They are caused by inflammatory changes in the periosteum around the root or by the development and softening of fibromas; the fangs of the tooth, which is normally situated in the jaw, project into the cavity of the cyst.

These may also develop in the maxilla cystomas, simple and proliferating, from a matrix connected with the tooth follicle or enamel organ, their connection with the tooth becoming evident from the structure of the wall as well as from the fact that they usually contain either rudimentary or fully developed, though malformed, teeth.

PATHOLOGICAL ANATOMY.

The contents of the dentigerous cyst may be simply clear and thin, or a more albuminous viscid fluid containing cholestearin crystals and of various shades of color, owing to admixture with blood; in the contents may or may not be found epithelial cells derived from the lining of the cyst. In case infection with pus microbes takes place the contents become purulent and large masses, loosened from the cyst wall in consequence of the inflammation, will then float in the pus.

The wall proper of these cysts is usually composed of firm connective tissue, with but few vessels, upon the inner aspect of which is situated a single layer of epithelial cells which, though originally cylindrical, may on account of the constant intra-cystic pressure present considerable variation as to shape and size. In certain cases the vessels in the cyst wall have been so numerous and so large as to give rise to pulsation synchronous with the radial pulse.

Calcification of the wall may also take place. In some part of the wall will usually be found rudimentary or more or less developed teeth, most frequently simply the crown is found; it is usual for the fang of such a tooth, if it have one, to be imbedded in the tissue of the wall, while the crown projects into the cavity of the cyst. Usually the crown points in the direction of the alveolar margin of the affected jaw, but the tooth may have been inverted. Occasionally the tooth or rudiments thereof may be found loose in

the fluid. In the case first described two quite fully developed but malformed molars were found projecting into one large cyst; here it may be assumed that the two independent cysts became one from the disappearance by pressure of the intervening wall; the fact that two teeth were found involved shows that a displacement of two enamel organs may take place just as well as of one; the second case also illustrates the displacement of two organs.

SYMPTOMS AND DIAGNOSIS OF DENTIGEROUS CYSTS.

The symptoms of a follicular cyst are in the main local and consist of a very gradual expansion of a jawbone at some point, with a corresponding disfigurement of feature. The growth is slow and painless; the absence of pain is characteristic of dentigerous cysts, although in one or two instances of cyst in the lower jaw there was much pain, and this was thought to be due to direct pressure upon the inferior dental nerve after its bony canal had been completely absorbed. While the growth is intra-osseous and hidden in the jaw, fluctuation cannot be obtained, but as the bone gradually becomes thinner and thinner from the pressure, atrophy on account of the growing cyst, the bony walls soon yield to pressure and fluctuation is produced, the yielding wall returning to its normal shape with a peculiar and characteristic kind of crackling, called onomatopoetically *craquement* or parchment crackling. The skin usually remains movable over the tumor while the mucous membrane becomes tense and congested. A very valuable hint to correct diagnosis is the absence from the proper place in the alveolar border of some tooth or teeth which should have appeared and have not been removed. The presence or the known past presence of every tooth does not necessarily demonstrate that a cyst in a jaw is not follicular, because cysts have developed from supernumerary and temporary teeth and from supernumerary enamel organs.

Follicular cystomas appear most frequently at or soon after the time for the eruption of the successional tooth upon the impaction of which the growth of the cyst seems most frequently to depend, but instances are not wanting of cysts developing later; thus Jourdain mentions a case occurring in the upper jaw of a man sixty years old. Salter states that the upper incisors are more frequently involved than any other teeth, the cyst thus formed often dilating into the maxillary sinus and giving rise to symptoms that

often lead to mistakes in diagnosis, the cyst being taken for abscess and other diseases of the antrum. Exploratory puncture of the cyst will demonstrate the presence of a usually clear fluid containing cholestearin crystals and sometimes epithelial cells; there will be pus, of course, in case infection has taken place.

The differential diagnosis between the simple and the proliferating follicular cyst cannot be made definitely without incision into and direct inspection of the interior of the tumor. In conclusion it may be stated that the gradual and painless enlargement of a maxilla at any time, but more particularly during the period of second dentition, often connected with the unaccountable absence of some permanent tooth, should always suggest and usually means a follicular cyst. This probable diagnosis will receive further confirmation when fluxuation and parchment crackling demonstrate fluid contents and the gradual atrophy of the bone; and exploratory incision, which can be made the first step in the operative treatment, will render the diagnosis between follicular cystoma and other cystic tumors positive one way or the other, and if the tumor be follicular, the incision will also show to which variety it belongs.

In the history of the treatment of dentigerous cysts are found innumerable mistakes in diagnosis by some very illustrious surgeons, owing to which unnecessarily severe procedures, such as resection of the affected maxilla, were resorted to for the cure of simple follicular cystoma. Syme, Lisfranc, Gensoul, Legouest, Maisonneuve and others all excised one-half of the inferior maxilla under the mistaken diagnosis of osteo-sarcoma, while the real condition was a typical, simple, follicular cyst. Marchand reported a case in which a dentigerous cyst of the interior was mistaken for a sarcoma of the superior maxilla and resection of the maxilla was performed. He advises that in order to escape such an error, which may seem almost unavoidable, the antrum should be explored with a trocar in order to detect, if possible, the tooth. Incision into the antrum would be more certain and consequently more satisfactory.

TREATMENT.

The treatment of the simple variety is obviously plain and efficacious, namely, to incise the cyst as early and as thoroughly as possible, remove the impacted rudimentary or fully grown tooth, scrape away the epithelial lining and pack the cavity with suitable

material. In some instances it may become necessary to remove part of the jaw and of the cyst wall, in order to gain access to the cavity. Many surgeons advise that such operations be done, as frequently as possible, from within the mouth. While surgeons have erred in making too aggressive operations in case of simple dentigerous cyst, error has also been committed in treating proliferating cystomas ineffectively, subjecting the patient to many operations, each with its risk, where the correct one would be enough. Thus Mr. Syme narrates a case of such a tumor in the lower jaw, in a woman, on whom he operated three times by incision into the cyst, each time with only temporary benefit. Five years after the first operation he was obliged to remove one-half of the mandible. It is plain that when such proliferating cystomas have reached a considerable size it will be impossible to incise all the small cysts, some of them microscopic, any one of which, if left unopened, would go on proliferating. Koenig consequently advises exsection in all cases of proliferating cystomas of any size. As already indicated, the surgeon should regard the incision into a supposed simple cyst as exploratory, because a differential diagnosis between a simple and a proliferating cyst, particularly in the early period of growth, cannot be made without direct inspection; and the surgeon should also prepare the patient and be himself prepared, for the more severe operation in case the growth should be a multilocular one. In fact, it would seem to be a good plan, as suggested by McLane Tiffany, in all cases of operation upon tumors of the maxillæ, to incise the tumor first, in order to be absolutely certain that mistake in diagnosis may not result in an unnecessarily severe and disfiguring operation.—*North American Practitioner*.

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PRACTICAL NOTES.

REPAIRING BRIDGEWORK.

BY LOUIS OTTOFY, CHICAGO.

That bridges break and need repair, and that it is desirable to make repairs without removing the bridge, is very apparent from the many suggestions made, and the ingenuity exhibited in various methods of patching. A simple method of repairing a bridge (which it would have been almost impossible to remove) resorted to, was the following: A first bicuspid facing had broken away, in the case of a man where the moustache tolerably well covered the mouth; a large filling was introduced around the pins and backing, being anchored to them, thus making a more durable operation than could have been done in any other way. About one and a half hours were required to introduce the gold, a sixteenth of an ounce being used.

MEMORANDA.

No new colleges in August.

Dr. A. J. Richter, of Milwaukee, is on a pleasure tour in Europe.

Dr. W. G. Stowell, formerly of Chicago, has removed to Butte, Montana.

Dr. J. F. Fowler, an old dental practitioner of Newark, N. J., is deceased.

Do the Chinese contemplate the establishment of a dental college in Chicago?

WANTED.—In Chicago, a D. C. I. K.* permanent position for the right man.

The Congress of German Naturalists and Physicians meets at Halle, Germany, Sept. 21st to 25th.

A special meeting of the New Hampshire Dental Society will be held at Manchester, N. H., September 29 and 30, and October 1.

Eliza Ryan, of Lamar, Ark., aged eighty, was recently restored to sight, after being blind thirty years, by having a tooth extracted.—*Chicago Paper*.

There has been quietly ushered into this wicked world in the city of Chicago at a time to us unknown the "Chicago Tooth Saving Dental College." What next?

Drs. Corydon Palmer, of Warren, Ohio, and J. B. Rich, of Washington, D. C., were elected life members of the American Dental Association, having been engaged in the practice of dentistry for more than a half century.

Drs. J. A. Watling, of Ypsilanti, Mich.; E. R. Mullett, of Clinton, Iowa, N. D. Billmeyer, of Chattanooga, Tenn., E. R. Warner, of Morrison, Ill., and C. B. Rohland, of Alton, Ill., were late visitors to the World's Fair City.

The Northern Illinois Dental Society meets at Elgin, Wednesday and Thursday, Oct. 21 and 22, 1891.

T. W. BECKWITH, Secretary, Sterling.

E. J. PERRY, Chairman Ex. Committee, 1212 Tacoma Building, Chicago.

We sincerely regret that last month an erroneous statement was made in the DENTAL REVIEW which is calculated to mislead and create the impression that Chicago activity is on the decline. Right in the midst of the hottest of dog-days, almost ere the whizz and boom-bang of the fire cracker had ceased its uproar, *i. e.*, on the 9th day of July, there was duly incorporated in the State of Illinois a dental college bearing the beautiful cognomen: Nord-Amerikanische Deutsche Zahnarznschule," whose principal object will be to educate the subjects of Wilhelm II.

NANGKOK, CHINA, 1st Aug., 1891.

Letter Dental Exam.—Me wan tu bee a denlist, me tol by melican man you havee a Chinee denlal collegee, how muchee does it cos to go to this collegee.

Yous tluly,

HIP WONG CHOW.

[Hippie dear, you have been misinformed, there is no Chinese dental college in Chicago—that is—not yet. The probabilities are, that we shall have Norwegian, French, Italian, Spanish, Russian, Turkish and Japanese dental colleges here long before any one will take the trouble to incorporate one for each of our Chinese, Kafir, Hottentot, Persian or Fiji friends.]

*Dental-College-Incorporation-Killer.

NEW JERSEY STATE DENTAL SOCIETY.

Officers for 1891-2: President, B. F. Lucky, Paterson; vice president, Oscar Adalberg, Elizabeth; secretary, C. A. Meeker, Newark; treasurer, George C. Brown, Elizabeth; executive committee, Drs. Holbrook, Watkins, Savage and Iredehl.

LOST AND FOUND OR TRANSPLANTED.

Lost--June 29--Lower set of teeth, near cor. State and Washington sts.; finder will be rewarded.
J. D. SULLIVAN, 210 Wabash ave.

HOUSTON, Tex., July 12.--Mrs. Kate Williams, a domestic, has given birth to a boy baby which has a full set of teeth. Medical men are puzzled. The new arrival is a perfect child. Not since the days of Richard III. has such a youngster been heard of.—*Ex.*

MASSACHUSETTS DENTAL SOCIETY.

Officers for 1891-2: President, George F. Eames, Boston; first vice president, J. W. Ball, Boston; second vice president, W. E. Page, Boston; secretary, Edgar O. Kinsman, Cambridge; treasurer, Edward Page, Charlestown; librarian, J. K. Knight, Hyde Park; executive committee, R. R. Andrews, J. K. Knight, W. E. Boardman, H. S. Draper and V. C. Pond.

SUSQUEHANNA DENTAL ASSOCIATION.

The twenty-seventh annual session of the Susquehanna Dental Association held at Eagles Mere, July 8th and 9th, 1891, elected as officers for the ensuing year, John C. Hertz, president; C. W. Huntington, vice president; Henry Gerhart, treasurer; Victor S. Jones, recording secretary; Howard S. Seip, assistant secretary; John J. Burke, corresponding secretary. Delegates to the American Dental Association: Drs. H. M. Young, H. S. Seip, J. C. Hertz, J. J. Burke, G. W. Klump, V. S. Jones.

We have a membership of thirty-nine active members. The Association is in a flourishing condition.

V. S. JONES, *Rec. Secretary.*

JNO. C. HERTZ, *Pres.*

PENNSYLVANIA STATE DENTAL SOCIETY.

At the late meeting held in Philadelphia the following officers were elected for 1891-2: President, Louis Jack, Philadelphia; first vice president, C. S. Beck, Wilkesbarre; second vice president, F. L. Bassett, Philadelphia; recording secretary, C. V. Kratzer, Reading; treasurer, G. W. Klump, Williamsport; executive committee, F. L. Bassett, D. N. McQuillen, P. K. Filbert, C. S. Beck, W. H. Fundenberg; State dental examining board, W. E. Magill, J. C. Green, W. E. Van Orsdel, Louis Jack, G. W. Klump, J. A. Libbey, C. S. Beck.

C. V. KRATZER, *Secretary.*

SOUTHERN DENTAL ASSOCIATION.

At the late meeting of the Southern Dental Association held at Morehead, N. C., the following named officers were elected for 1891-2: President, Gordon White, Nashville, Tenn.; first, second and third vice presidents, respectively, E. L. Hunter

Enfield, N. C.; J. T. Calvert, Spartanburg, S. C., and W. H. Marshall, Oxford, Miss.; corresponding secretary, D. R. Stubblefield, Nashville, Tenn.; recording secretary, H. C. Herring, Concord, N. C.; treasurer, H. E. Beach, Clarksville, Tenn.; members of executive committee, E. B. Marshall, Rome, Ga., and W. H. Richards, Knoxville, Tenn. The next meeting will be held beginning on the last Tuesday in July at Harrogate, near Cumberland Gap, Tenn.

HIS FALSE TEETH BLOCKED THE TUNNEL. A MAN SNEEZES OUT HIS FALSE TEETH
AND DELAYED PASSENGERS—THE SEQUEL.

There was a blockade in the Washington street tunnel Chicago. As a Madison street grip-car came eastward into the tunnel a well-dressed man with a plug hat sitting on the front seat was seized with a violent fit of sneezing. With one extra effort he sneezed out his artificial teeth. They flew over the dashboard onto the track. He set up a howl and Gripman Benjamin brought the car to a standstill.

"What's the matter?" called out Conductor Keefe. "The man's loath is teeth," laughed the gripman. Everybody laughed and all got out and helped hunt for the chawers. Other cars crowded in, but the teeth could not be found. The car moved slowly ahead and the next train of the Milwaukee avenue line pulled up. They were finally found under the Milwaukee avenue car. The eye-tooth on the right side had been broken by the fall. As he adjusted his teeth amid the laughter and profanity of the crowd he growled: "That's just my luck. I've been bearing wheat. I suppose if I'd get the hic-coughs I'd shake my ears out by their roots." The cars were delayed five minutes by the losing of the teeth.--*Ex.*

ODE TO A TOOTHPICK.

A little splint of wood are you,
Tough, but often very brittle too,
Sharpened both your ends should be
Though oft the point we fail to see.

A comfort, true, you are to many,
In fact methinks I know not any
Who would refuse your kind assistance
To remove some slight resistance
From twixt the teeth; yet shame on thee
Who make us call Mephistofele,
As you sometime split or break in two,
When between the teeth we urge you through,
And leave a part of you to dwell
Beside the grub we love so well.

Yet we love thee little stick,
And after dining, our teeth pick,
And many a thought with you bring out;
A sage conclusion, a dream about
Sometime ago, a winning smile
Of a pretty face, us to beguile,
And oft we do with reason bless
The points you urge on business,
So, I swear true, through thin and thick,
And will befriend thee, *my toothpick*.

F. D. T.

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ORIGINAL COMMUNICATIONS.

THE EXAMINATION OF DIPLOMA HOLDERS BY STATE BOARDS OF DENTAL EXAMINERS—ITS RELATION TO THE DENTAL COLLEGES.

By J. H. MARTINDALE, M. D., D. D. S., Member Minnesota Board of Dental Examiners and Ex-Secretary of the National Association of Boards of Dental Examiners.

There have been for many years past been grounds for painful suspicion that many of the dental colleges organized under the loose provisions under which in most States a college charter may be obtained, are granting the degree of Doctor of Dental Surgery to incompetent and oft-times dishonest men. On the other hand there has been an unusual tendency for young men, encouraged by the prospect held out to them by certain dental schools, of the maximum of education at the minimum of time and expense, to rush into the study of dentistry without having either natural aptitude nor the preliminary education necessary for the study of so comprehensive a science and art. These influences, coupled with the absence of sufficiently rigid legal restraints, have given quackery and charlatanism a strong foothold.

In view of these facts there is scarcely room for question as to the necessity of legislation which will protect the community from dishonesty, incompetency and ignorance; by so regulating the instructing bodies that they will graduate only thoroughly educated, scientific and conscientious dentists.

A diploma at the present time has a value only proportional to the reputability of the college issuing it, and is by no means evidence of its holder's competency to skillfully and safely minister to

the necessities of our people. Hence it will be seen that the practice of the boards of examiners in some States, viz, the granting of privileges of practice to any holder of a dental degree, is insufficient and unsafe in view of the aforementioned and completely established facts. Neither is the practice prevailing in some of the other States of endorsing as competent the holders of diplomas from the schools represented in the list of so-called "reputable colleges" issued by the National Association of Boards of Dental Examiners sufficient, as the reports of the State of Massachusetts, through the president of its Board of Dental Examiners,* and of the Minnesota State Board of Dental Examiners † demonstrate conclusively that several of the colleges contained in the above-mentioned "list of reputable colleges" are graduating in recent years men incapable of safely practicing dentistry.

The suspicions long rife in the minds of thoughtful men, that a degree in either medicine or dentistry is by no means incontrovertible evidence of its holder's fitness to practice his profession, is receiving positive confirmation from the reports of a few State Boards of Examiners, which in several of the United States have been authorized to examine graduates under the constitutional provisions permitting necessary health and police regulations, within the State; said reports showing that graduates in medicine and dentistry from a large number of schools (among the number many listed in the list of "reputable colleges," compiled by the National Association of Boards of Dental Examiners) are in many instances most illy equipped to minister to the necessities of the commonwealth. In Minnesota alone, the reports embraced between April 24th, 1889 and June 9th, 1891 (two years) show that it has been necessary for them to decline license to practice in that State to 30 per cent of the dental graduates who have appeared before them. These gentlemen who failed to pass (12 in number) were all graduates of *recent* years (the oldest having received his diploma in 1884 and ten of them in 1890 and 1891,) showing that the colleges of *to-day*, of the much boasted "modern system," are doing this work. One great hindrance to the efficiency of restrictive dental enactments, is their want of uniformity, which besides its annoyance in other features, certainly puts far away that happy

* See Dr. Shepard's letter, proceedings National Association of Boards of Dental Examiners, 1890.

† See report of 1890, Minnesota State Board of Dental Examiners.

day when the Board of Examiners' license to practice in one State shall be acceptable to the authorities in another State as an evidence of fitness to practice. How can we account for this great diversity? It is certainly not due to the fact that framers of laws have nothing to guide them. Nor can it be that the conditions of dental practice or the needs for skillful and intelligent dental service are so very unlike in the different States.

One very prominent dentist and member of a committee appointed recently in a western State to bring about through their legislature a law providing for both dental diploma, and subsequent test of ability by a board, in writing to me of his disappointment at its defeat, says: "We have tried to get a law passed which should reflect the benefits of our experience gained in the last eight years, but a *singular conspiracy* of our *leading* college men and our *scallawag dentists* succeeded in defeating the same." How much the influence alluded to in this letter may have proved a factor in rendering it impossible for the people in other States to enjoy this wise and necessary protection, I simply submit for the judgment of others to determine; it certainly did not burden the hands of the legislative committee in the State of Minnesota, where the professors in the one dental college in the State (a department of the State University) and the dental profession at large, were to a unit unanimously expressive of their desire that a law with a graduate "test" should be passed. It is frequently asked; "Who will examine our dental examiners, and how shall we feel sure that the examiners should presume to exercise surveillance over the acts of the august and most able men who teach in dental colleges?" I would answer that although occasionally an unfortunate appointment may be made upon a board of examiners, yet when the members of the board are elected by the State Dental Societies, ratified by the Governor of the State, (as in Minnesota and several other States) the dentists would have no one but themselves to blame if their boards of dental examiners were not at least as capable of executing their functions as are the teachers of many of our chartered dental schools. In this connection it may not prove inappropriate to quote a few lines from an article by Dr. Wm. G. Eggleston in the *North American Review* for October, 1890, entitled "The Open Door of Quackery," without need for very much exercise of the imagination, these words will be seen to fit very nearly the condition of many of our dental colleges.

Dr. Eggleston says, "Looking at our medical colleges, we see that an honorable and very small minority have taken a firm stand for high medical education." The majority of them, however, being in the hands of private individuals conducted for the money that can be made out of them, have done nothing in the way of raising our low standard of medical education *except by compulsion* from the few efficient *State Medical Boards*." "Complaisant legislatures have chartered unnecessary colleges, 'professors' have invested money in them, and that money must be made to bear interest." "In order to draw students, the standards for matriculation and graduation have been put down so low as to make an American diploma almost a reproach in other countries."

One very strange circumstance that has followed fast upon the developments made by such boards as require first, that candidates shall possess a dental diploma, and endure also subsequent test examination from the Board, has been the manifest inclination of many dental colleges to propagate the opinion expressed in a recent editorial in the *International Dental Journal*, which says: "They" (the boards) "positively refused to adopt anything that might seem to be a recognition of the college diploma." "This document secured at the cost of so much time, labor and money, was to them worthless so far as permitting the holder thereof to the rights to practice." This statement of the case is misleading, and we trust not shared by the most liberal and logical of the college men. Had it indeed been the case (as stated in the editorial) that all the boards declined to recognize the diploma as a prerequisite to enter into practice, then might it truly be suspected, that a long-suffering public, wearied and disgusted with the frequent derelictions of the colleges, had in their wrath enacted that no longer should diplomas be counted as any evidence of ability and that any and all persons might appear before the boards for examination. Not so! Quite aware as were the framers of these laws of the notable and most shameful carelessness of many of the colleges, they still believed that there were honest men in them, that good colleges were a necessity, that the worthy aspirations of all well-meaning and well-doing schools, as well as the protection of the public, and the honor of dentistry would be bettered by a post graduate examination at the hands of the board. Why should the worthy professors fear an honest and thoroughly reasonable examination, consisting of practical work performed upon patients, as well as oral and written

queries? An examination which is open to all deans and professors in colleges? Is it because they fear the test? True gold welcomes the test acids of the assayer. It is only the spurious metal that shambles away with wordy excuses, signifying nothing. Again it is alleged that it is not in accord with the spirit of our institutions, that a diploma issuing from an institution legally chartered in one State, should not be regarded in itself as valid grounds for privilege to practice in another State. Not at all! Numberless examples to the contrary may easily be recalled, but one will suffice. It is well known that a literary diploma, obtained of a legally chartered, nay famous educational institution in one State, is not regarded evidence of it's holder's fitness to teach the subject mastered in his alma mater in another State. The State to which he goes requires that regardless of any diploma, the would-be teacher should amply demonstrate by an examination, his fitness to teach in the State of his éléction. In conclusion, I would allude to a very unfortunate action of the National Association of Boards of Dental Examiners at its recent Saratoga meeting. The action referred to is the adoption of the following resolution:

Resolved, That it is recommended to the State boards that when a graduate, after examination, has been refused a license and his college requests information as to the causes of his failure to pass the examination, the boards shall furnish the faculty with a detailed statement of the subjects and questions on which the applicant has failed.

Resolved, That we discountenance publication by the State boards of the names of the colleges whose graduates have failed to pass.

The National Association of Boards, it has been hoped, would do much through its advisory functions (legal or mandatory functions of course it cannot have) to protect the public through its influence in bringing about uniform legislation of a high grade in the different States. That it should have thus retraced its actions of last year, and thus withheld its influence for protection to the people and regulation of the colleges, is a source of profound regret. Let us analyze this resolution a little. How unnecessary, how impracticable is it to ask a board of dental examiners to furnish the faculty with "a detailed statement of the subjects and questions upon which applicant has failed without also the answer to the same;" and do the faculties think that they will be furnished with the original documents of their unsuccessful progeny—bristling as they frequently are with most wretched orthography, chirography and evidences of hopeless ignorance?

These papers are articles of official record for preservation by the board, and not safely to be turned over to the Dean of a dental college or anyone else. Do they also expect that in any satisfactory manner the boards can present to them the results of the oral examinations? Most absurd of all, do they think that the boards can send on to them the various *patients* upon whom applicants work (in Minnesota) one whole day? The boards have nothing to say to the colleges as to how *they* shall *prepare* their students to ultimately practice dentistry and pass the boards' examinations. That is their business. The boards would submit that they are duly appointed under the police regulations, and at the instance of their State dental associations, to enquire without let or hindrance in the way prescribed by law, into the candidate's fitness to practice dentistry in their State. As to the second clause of the resolution, we would simply say that the dental law of Minnesota (and we presume also those of some other States) provides explicitly for a *full* report of the proceedings of the board to the Governor and people of the State, and a due regard for the exercise of their complete duty would not permit such a radical curtailment of their reports as that asked by the resolution. We also submit that one of the most important and potent benefits of the law, is that in a candid and truthful report, plainly and widely the names of the colleges whose students fail to pass, should be announced, not to create antagonism and scandal, but in the hopes that thereby the good work of the colleges may be approved and sustained, and the bad work rebuked. We deem it to be one of the most certain means of helping the cause of true dental education and affording protection to the health and welfare of the people.

PRESIDENT'S ADDRESS*.

BY M. G. JENISON, M. D., D. D. S., MINNEAPOLIS, MINN.

When we consider that Dental Societies have been the means of more progress and elevation in our profession than any other factor, is it not strange that so many good men can afford to stay away? No matter who the person, he cannot avoid becoming narrow and rutted by isolating himself from his fellow workers. Our meetings should be the place where we can exchange the cream of our labors and thereby be benefited, but society work is yet far

*Read before the Minnesota State Dental Association, 1891.

from the ideal; to even approach this, the work must be more evenly distributed, and not left to a few who are frequently rewarded for their efforts by being accused of working for self-gloration. While the past record of this society—with which you are all familiar—is so good, we cannot but feel that it ought to embrace in its membership a larger proportion of the total enrollment of the State; as one means to this end, it has seemed to many that a change of date would afford opportunity for a larger attendance. I would suggest the appointment of a committee to consider this matter.

When this society was organized nine years ago, article first of its constitution stated its object to be:

“To contribute to the elevation of the dental profession by encouraging a full and liberal interchange of opinions in methods of practice and the literary discussion of subjects relating to dentistry; to advance the standard of dental education; to promote the usefulness, honor and the interests of its members; to enlighten and direct public opinion in regard to the duties, responsibilities and requirements of the dental profession, and the maintenance of a high order of professional excellence among its members.”

I think these principles are adhered to as closely as in any association, but the end is not yet; we must not relax our efforts, for if we do, we will soon be floundering in the slough of “nothingness” instead of standing at the front as we now do.

The amendment to the constitution which is to be acted upon at this meeting, provides for the consideration of *all* matters by the executive committee, instead of allowing their introduction upon the floor in open meeting, which always results in the consumption of much valuable time before a conclusion can be reached. I hope its trial, under a suspension of the rules, for this year will be so satisfactory as to insure its permanent adoption.

Clinics, which rightfully occupy a prominent place at all dental gatherings, it seems to me might be more instructive and reach a larger number if in all possible cases the operation or idea was demonstrated upon teeth mounted in articulators, or elucidated by charts, drawings, models and appliances, instead of being performed upon the patient, where only a limited number can see more than a small portion of the operation. I am glad to see this idea gaining ground in the profession, and hope the members of

our society will appreciate its advantages sufficiently to give their demonstrations in this matter.

Another feature which we hope to see develop is the making of the exhibit purely educational in character. Better results may be obtained if as much of the material as possible be donated to the society. All material thus acquired will be preserved in the museum of the dental department of the University, where at all times it will be available for use.

Our State law is one of the children of the society; we are proud to claim it. Though it is not perfect, we think it is superior to all of its cousins in other States; to the qualified it works no injustice; others we do not want in Minnesota. When a diploma can mean more than a certificate, and a uniform standard of qualification be established by some central board or power, then will we send our child off on a long vacation; until then we shall let him cry for right, justice and progress. As with all good laws, its chief object is the protection of the public by the elevation of the profession, and not the creation of a monopoly for the benefit of a few. Yet, it receives the least support from those who are in a position to derive the greatest benefit from its protection.

The State Board, as a guardian of the child, *must* have the support of the profession of the State. The actions of the board are always open to inspection of any one interested, and if more would avail themselves of this opportunity, it would effectually silence all unjust criticism, especially that which charges that partiality is shown to graduates of our State University.

I would suggest the continuance of a committee from this society, to which be added two who are not members of the society, whose duty it shall be to keep themselves informed as to the actions and needs of the board, and extend to them such aid as is necessary.

Our Dental College, coming as it does under the State seal, should be claimed as a relative. The standard is the highest, its aim being *quality* rather than quantity. When its work is better known it will receive what it deserves, the united support of the profession of Minnesota. If some power could do away with all but State or endowed colleges, we could soon dispense with State laws, and dentistry would be a profession in the full sense of the word. We would not then be shouting for a seat upon our medical brother's coat-tail, for we would be as much entitled to be

called a professional man as he. As it is, we receive recognition as fast as we deserve it. Two important features in the announcement of our University Dental Department are deserving of special notice.

First: "The faculty of this college recognizes the right of the State to control the practice of dentistry within its border by regularly appointed boards of examiners. It also holds that a diploma should represent the standard of education in the institution granting it, the same as literary diplomas, and that it should not carry with it the license to practice, but that this power should be relegated to legally appointed bodies in the several States." If more colleges would place themselves on this eminently fair basis, many of the difficulties between schools and State Boards would be obviated, and the profession would be better for it. While a diploma means only a certificate of attendance on a perscribed course of study, it should not carry with it a license to practice, without further test of qualifications.

The other feature in the announcement that I desire to speak of is the "preliminary course," (at present optional).

This is intended for a class of students who find themselves unprepared to pass the preliminary examination for entrance into the regular college course; also for those desiring to enter some of the professional schools, who have not decided which special branch of the healing art they shall study.

The manual training part of the course will be thorough and will comprise, forge, vice and machine work, and an acquaintance with the physical properties of metals as shown in the crucible. Also a study of mechanics and mechanism from text books.

Although this preliminary training has a direct dental tendency, the student will find it time well spent, if he should desire to change to some other professional life after the completion of the term. It would seem that the idea could work none but the best results to all the students who avail themselves of it, and I am proud to see Minnesota the first to inaugurate such a course.

As Minnesotans we can take the same just pride in our past professional history as we do in the material progress of the State, but we must not let it obstruct our view of the needs of the future. They will be numerous and important and will require the earnest, honest efforts of every one of us.

REPORTS ON PYORRHŒA ALVEOLARIS AND ITS TREATMENT.*

BY W. L. JERMAN, M. D., D. D. S., MINNEAPOLIS, MINN.

The following questions were distributed to members of the profession, and replies solicited: 1, Is pyorrhœa alveolaris, in your judgment, the suppurative stage of catarrhal stomatitis? If not, why not? 2, In your experience, about how many cases of pyorrhœa alveolaris have you found complicated with nasal catarrh or catarrhal pharyngitis? 3, In what proportion of cases has it seemed to be congenital? 4, Has it appeared to be associated with irregularity of the teeth? If so, in what proportion of cases? 5, What is your special line of treatment?

A few have responded as follows: To the first question, Is pyorrhœa alveolaris, in your judgment, the suppurative stage of catarrhal stomatitis? If not, why not?

DR. ANGLE: We believe there is as yet no well defined cause established.

DR. MARTINDALE: I would say that pyorrhœa alveolaris, which simply means pus issuing from the alveolus, is a *symp-tom* which may apply to a host of separate and distinct diseases of the gums and alveoli. I imagine the questioner means to ask whether a disease characterized by chronic inflammation and tumefaction of the gums, attended by recession of their margins from the necks of the teeth together with suppuration (probably of an infectious character) and molecular solution of the bony elements of the alveolus, a disease more happily denominated by Dr. G. V. Black "phagadenic pericementitis" is the same thing as the suppurative stage of catarrhal stomatitis. I would answer that catarrhal stomatitis would undoubtedly predispose to suppurative affections of the gums, but inasmuch as stomatitis is from long usage, understood as an affection of the mucous membrane of the mouth at large (usually affecting especially the follicles), I do not think we can consider pyorrhœa alveolaris produced by ulceration of the alveoli, and catarrhal stomatitis as synonymous.

DR. BRIMMER: No, I believe it due to a highly irritating calculus around the necks of the teeth—not salivary—but deposited from the serum.

DR. GOODRICH: Yes.

DR. PATTERSON of Kansas City: Pyorrhœa alveolaris is in my

*Read before the Minnesota State Dental Association, 1891.

mind *unquestionably* the suppurative stage of catarrhal stomatitis. I have so held for over eight years; continued observations invariably confirming this diagnosis.

DR. INGERSOLL of Keokuk: No, catarrh, in its primary stages is limited to the mucous surfaces. It extends only by continuity, or by contiguity of tissue. It cannot extend to the root membrane by continuity, for the mucous membrane and the root membrane are different kinds of tissue, nor by contiguity, for the contiguous mucous membrane and gum tissue are seldom involved; thus limiting the pyorrhœa disease to the root membrane. The suppurative stage of catarrh is preceded by a profuse discharge of viscid mucus, which according to my observation, does not precede pyorrhœa alveolaris (peripylemia). For these reasons I cannot regard the disease as catarrhal in its manifestations.

DR. BLACK, Jacksonville: No, certainly not, because there is no catarrhal stomatitis connected with it. It is not a disease of mucous surfaces.

DR. THOMPSON, Topeka: I think pyorrhœa catarrhal in its nature, consequent on nutrition.

2D QUESTION: In your experience, about how many cases of pyorrhœa alveolaris have you found complicated with nasal catarrh or catarrhal pharyngitis?

DR. ANGLE: Only a small percentage, and those cases we believe to be wholly accidental and associated in no way.

DR. MARTINDALE: I would say that as I have not preserved a tabular record of the many alveolar diseases I have treated (an omission which I regret), I cannot say how many cases of phagadenic pericementitis have been complicated with nasal or pharyngeal catarrh, but inasmuch as the lowered vitality, and anæmia of the nasal and pharyngeal mucous membranes would also predispose the gingival borders, to suppurative disease, I imagine one-quarter perhaps of my cases were thus complicated.

DR. BRIMMER: I cannot say that I have ever noticed any connection, or kindred complication.

DR. GOODRICH: In no case was catarrh present in such form as to make a complicated case.

DR. PATTERSON: Eight out of ten. This is from a record of cases.

DR. INGERSOLL: Catarrh is far more prevalent than pyorrhœa alveolaris. The same patient might therefore have both diseases,

not in any pathological sense *complicated* with each other, but simply *synchronous*.

DR. BLACK: Practically none—can't now think of a single case.

DR. THOMPSON: I have noticed but few cases in which it was associated, but it could be independent and frequently is so.

3D QUESTION: In what proportion of cases has it seemed to be congenital?

DR. ANGLE: In nearly every case.

DR. MARTINDALE: I would say that my opportunities to acquaint myself with the conditions of cases under my hands which were affected at birth have not been sufficient for me to give data.

DR. BRIMMER: There may be an inherited diathesis but in no case can it be congenital.

DR. GOODRICH: Can't say.

DR. PATTERSON: Probably about one in five. The word congenital in this connection, however, would express to me habit and environment, instead of congenital character of tissue.

DR. INGERSOLL: Only in such peculiar cases as might render any morbid disease congenital.

DR. BLACK: Inflammation of peridental membrane is clearly hereditary—phagadenic pericementitis is not.

DR. THOMPSON: In most cases it is congenital and hereditary, if the constitutional predisposition of faulty assimilations is inherited.

4TH QUESTION: Has it appeared to be associated with irregularity of the teeth? If so, in what proportion of cases?

DR. ANGLE: *Only in a very small per cent* less than in regular arches, for it is found in the regular and perfectly formed teeth and arches.

DR. MARTINDALE: In cases where mouth breathing exists as a cause of irregularity, yes; also where irregularity favored calcic deposits which in turn were aggravating causes of phagadenic pericementitis.

DR. BRIMMER: Not always—should say it is as often found where the teeth are regular.

DR. GOODRICH: No. In all cases that I have had to treat, the upper denture was regular, the lower incisors only being slightly irregular. I think most dentists would say that they were in a normal position.

DR. PATTERSON: Irregularity is certainly a predisposing cause as it hinders and prevents thorough cleaning of the mouth.

DR. INGERSOLL: No.

DR. BLACK: Not especially.

DR. THOMPSON: Irregularity of the teeth has little to do with it, except in that it may lead to neglect of proper cleaning and the accumulation of calculi as a local irritant.

5th. QUESTION: What is your special treatment?

DR. ANGLE: As the causes of this disease are as yet so imperfectly understood, it is, I think, impossible to lay down a satisfactory treatment. Indeed, I am very skeptical in regard to the successful treatment of a well defined case of this disease.

Notwithstanding some good authorities to the contrary, I am convinced that many cases which have been reported cured are simply cases of local inflammation—resulting from salivary and serumal deposits—and are not real cases of phagadenic inflammation of the peridental membrane.

I have yet to see a well defined case of this disease that has been cured; and to claim that the dental membrane, after being wasted from one-half to one-third of its original dimensions, can be restored, is, I think, fully as absurd as to say that a lung, wasted by tuberculosis, can be restored, or that a person in the last stages of pulmonary consumption can be cured. I doubt if it would not be more nearly a miracle to restore the lost dental membrane to health and original dimensions than the lost lung tissue.

For when we consider the structure of the peridental membrane and cementum, and the manner of their attachment, it is folly to hope for the restoration after it has once been lost by disease. You know the cementum is channeled in every direction by lakes and canals or lacunæ and canaliculi, which, in health, are filled with active living matter and cells, and thus the attachment of the membrane is the strongest and most intimate.

Now, after the membrane has wasted and the cementum has, for months or years, been bathed in putrid matter, and the structure thoroughly saturated with the same, is it not absurd to suppose the fibers of connective tissue will ever find a healthy lodgment in such soil? Even if it were possible to again reproduce the membrane, which would of itself be just as great a feat on the part of nature to perform as it would be to reproduce any other lost organ, a limb, for example, a portion of the ear, or a tooth, the reproduced

tissue would be cicatricial or a tissue of low vitality, which could not withstand the conditions which originally destroyed its predecessor.

By extra cleanliness we may retard the progress of the disease and prolong the usefulness of the teeth. But we cannot restore them to their original health or prevent their ultimate loss.

The free use of peroxide of hydrogen daily injected into the pockets and festoons has proven the most beneficial of any line of treatment we know of.

DR. MARTINDALE: My lines of treatment are as diverse as are the causes of the disease and its variations and complications with constitutional diseases, especially rheumatic, syphilitic, tuberculous and scorbutic. I usually use, however, during one stage of nearly all cases peroxide of hydrogen $\frac{3}{4}$ j to gr. j hydrarg. bichlor. All so-called sure cures and specifics are fallacies.

DR. BRIMMER: At first injections of peroxide of hydrogen, afterward aromatic sulphuric acid and tincture of calendula.

DR. GOODRICH: My experience has been limited, because I have not had an opportunity to dismiss a case, unfortunately for me they have all dismissed themselves before a cure was effected, so I can't say that I have a special line of treatment.

DR. PATTERSON: I rely almost solely upon *expert* surgical manipulation, afterward *absolute cleansing and hygiene of the mouth*.

DR. INGERSOLL: Antiseptic, astringent and stimulant. Sulph. zinc is astringent, tonic, anti-microbic and alterative, and has a very beneficial effect after thoroughly cleansing and disinfecting. A pus destroyer first, then to restore the functions of the tissues comes next, which is just as important in curing the disease as to destroy the pus.

DR. BLACK: Stimulating antiseptics: Cleanliness.

DR. THOMPSON: Thorough removal of deposits and periodic application in the pockets, of aromatic sulphuric acid, full strength.

Very little has been said by the gentlemen from whom I have quoted about constitutional treatment. I believe most cases can be treated more successfully by systemic in conjunction with local treatment, and would suggest the use of arsenicum every day in the week and sulphur on Sunday.

ORAL SURGERY.*

BY CLAUDE KREMER, D. D. S., MABEL, MINN.

In presenting this subject, it is not with the expectation of being able to introduce any new ideas, or of saying anything with which the majority present are unfamiliar; but because of the personal interest I take in it, and the belief that we, as dentists, do not, as a rule, devote sufficient time and thought to this, one of the most interesting and important studies connected with our profession. And it is with the sincere desire to stimulate thought upon this topic that this paper is placed before you; and I earnestly trust that this desire may be realized and that it will exert stimulating effects instead of acting as my fears dictate—soporifically.

First; It is my desire to emphasize the necessity for higher and broader education in our profession in order to make those who pass the prescribed examinations in truth and in fact, "*Doctors of Dental Surgery.*" In years past, members of our profession were satisfied and considered duty well done when aching teeth had been removed or filled and the patient had handed in the fee. No matter what condition the soft tissues of the mouth may have been in, they were not taken into consideration. Even if noticed at all, and found to be in an abnormal condition, the patient was referred to his family physician for treatment. But as the wheels of time and progress have revolved, we are placed in an entirely different relation to our patient, and more can be reasonably expected of us. The cultured dentist of to-day sees not only the teeth, but looks at the mouth in its entirety; and upon the discovery of diseased conditions of tissues other than the teeth, recognizes it as his duty to give his earnest attention and best skill to the restoration to health of those tissues, even though the exigencies of the case demand surgical proceedings.

Unfortunately the laws of this State governing the practice of dentistry do not sufficiently protect our profession, and the too general supposition exists that none but the "M. D." is qualified to resort to heroic surgical operations. This is manifestly incorrect and unjust, for no "M. D." is required to pass a more thorough examination in relation to cranial anatomy, oral pathology and kindred subjects, than is the "D. D. S." The latter possesses an advantage, for he acquires by daily experience in operating upon the mouth, a degree of manipulative ability in the use of instru-

*Read before the Minnesota State Dental Association, 1891.

ments that is never acquired by the former. This remark is not prompted by any feeling of jealousy or animosity toward physicians, for I recognize them as belonging to the noblest of God's creatures, and as being in many instances real blessings—very much disguised no doubt, but still, blessings. It is simply to call attention to the fact that to the dentist, and not to the physician should cases of oral surgery be entrusted; and to inveigh against the existence of laws which are in direct antagonism to the rights and privileges and the performance of the duties of the dentist; and also to impress upon your minds the fact that these laws will exist until such time as we unitedly demand their repeal and the enactment of new ones more in accord with the spirit of the times.

When speaking of the "*rights*" of the dentist, I mean the right to perform any operation that comes within the domain of oral surgery, without being any more amenable to the laws of our country than would be the M. D., in case of an unfavorable termination.

Some there are, in our profession, who, from an innate repugnance to it, could not be induced to undertake an operation. Others, who would fairly revel in the performance of one, are deterred from it through a natural abhorrence of the sensation produced by the grip of the "iron hand of the law."

Right here I wish to say to both those who do not care, and to those who do care to engage in the practice of oral surgery, that whether or not we ever engage in the practice named, we will never be fully qualified for our duties in a general dental practice until we have given this subject thorough and exhaustive study; for it is requisite that the dentist of the present shall be able to form differential diagnoses between malignant and benign growths; between carious and healthy bone, and in short between all pathological and physiological conditions with which he may come in contact in the mouth. This ability is a necessity, even though he may never utilize his knowledge for any other purpose than to give proper warning and advice to his patients. Speaking of giving advice reminds me that 'tis said that "It is more blessed to give than to receive," and also, that the remark applies more particularly to advice than to anything else. However, to illustrate the fact that advice is not always received even when given freely, witness the following, apropos of our subject:

Some time ago a case of abnormal growth was presented for diagnosis. The abnormality was located on the lower lip, and pre-

sented a rather angry appearance. Inquiry into the family history failed to establish a scrofulous diathesis; but, as patients will sometimes forget the fate which overtook Ananias and the other fellow, it was deemed prudential to consider the patient or his ancestry guilty until their innocence was established beyond peradventure. Consequently he was put under the treatment of iodides; and as no improvement was discernible after a few weeks of this treatment, and the symptoms all favoring the diagnosis, the conclusion was reached that it was an epithelioma, and that nothing but a radical removal of the involved structure would or could give any promise of prolonging the life of the sufferer.

Accordingly, with all kindness, his condition was explained to him, and the necessity for an immediate operation dwelt upon at length, and a surgeon of eminence recommended. There appeared to be some doubt in the mind of the patient as to the correctness of the diagnosis, and he was consequently jubilant when informed by a local physician that he was not in a dangerous condition and that he would soon restore the parts to health without resorting to so disfiguring a method as the use of the knife. This eminent charlatan, with all the assumed virtues of a McHale, and the strong magnetic breath of the ordinary census enumerator, took the man in charge. Result—application of escharotics; a few months of agonizing torture, horrid to look upon and offensive to himself and those about him. At the present time, a marble shaft, upon which is inscribed, "Our Father"—"Gone but not forgotten," stands a silent sentinel over the resting place of the "late lamented." The eminent cancer manipulator had done his "duty." He had killed his patient and collected his fee; and, surrounded by the protecting influence of his diploma, he could look with disdain upon the laws concerning murder and criminal negligence.

Had the oral surgeon pursued a course similar to the one cited, the friends of the victim would have arisen in their wrath and made him regret having been born—and justly so. But he would not have been guilty of such gross and monumental stupidity, for, being surrounded with the works of men eminent in the profession, and being familiar with the contents of those works, he would have followed the course which reason and common sense and the experience of the past dictate, and the patient's life might have been prolonged for years.

Usually, persons suffering from any oral lesion, call on their

dentist, naturally attributing the disorder to a bad condition of the teeth. As specialists, we should possess not only the right but the ability to render to them relief. I am an ardent advocate of the specialist in all branches, and believe that when a man has a fever he should send for his physician; when his eyes or his ears are in need of attention, the man who makes a speciality of the treatment of those diseases, is the proper person to consult. When desirous of making his peace with his Creator, the theological specialist is sought for; and when he desires to make his will and cares little as to whether or not he is robbed, he sends for the person whose specialty in those things is legalized. When afflicted by any disease the mouth is heir to, he should send for, or call on his dentist, who, let us hope, may in the near future be accorded the right to both preach and practice the specialty of dental and oral surgery.

SYMPOSIUM ON PROSTHETIC DENTISTRY.

COMPILED BY C. H. GOODRICH, D. D. S., AND PRESENTED TO THE MINNESOTA STATE DENTAL ASSOCIATION, 1891.

Prosthetic dentistry has been presented to the dental profession in all its details by able-minded men, some of whom have added new thoughts and new impulses to this branch of our profession while others have simply rehashed and reiterated the ideas already published and which have been digested by all good and earnest college students. There are a few good mechanical dentists in our midst. We all understand some of the principles of mechanical dentistry. But when we look the subject squarely and honestly in the face we must acknowledge that few of us are perfect.

I am pleased at the branching out of our college. The preparatory course is an absolute necessity, as any one can verify who has become established in the practice of dentistry. Prosthetic dentistry consists of the application and manipulation of three laws; that of mechanics, art and geometry. To the end that the denture, or pieces of mechanical art which are to replace that which has been destroyed shall be nature restored, the dentist must be an artist, a mechanic and a scholar. He must understand the law of nature, art, mechanics, metallurgy, and somewhat of geometry. Let the coming dentist then go through such a preliminary course, to his regular course of study, as will teach him these laws, so that in his

practice that is to come, he can command them and not have them command him.

What the members of a society need, who have had the every day practice to contend with, is "little points" presented by all members of the society even though a member may feel as though his idea was too small and not worth his while.

I may have a little point that may help you. You may have a point for me.

You must remember that you are an artist, that your canvas is the human subject, that this canvas is to appear before the critical eye of the world. You must bear in mind the harmony of colors; do not spoil the harmony with an off color, in other words, do not replace what you have extracted and which was of a bluish tint, with a yellow tint. Then to be a true artist, we must have the law of geometry at our finger ends, to understand the angles and lines; then the law of mechanics, in getting our bite, etc.; all these if studied and used will enable us to so complete our canvas, and that which we all crave, fame and fortune, will come our way.

But our meeting is for the purpose of exchanging ideas in the scientific and practical workings of our profession, and I have some little points from some of the dentists whose names appear on the programme to present to you.

DR. G. E. ANDREWS.—In taking impressions for partial plates, where the teeth are long and irregular, a good plan is to fill the spaces between the teeth with plaster, allowing it to harden—varnish and then take impression over all—after removing impression, take out the "cores" and place them in position—in impression.

Oil should not be used on impressions or bites as it softens the plaster coming in contact with it—and its uneven flow prevents obtaining a correct model—collodion, sandarac varnish or soap are better, but I prefer a thin shellac varnish—paint the impression and soak in water a few minutes and then run cast; as soon as it hardens, remove impression—result—a hard smooth model.

Rubber plates should be of uniform thickness, care being taken in waxing up to avoid unevenness.

Surfaces coming in contact with the mucous membrane should be smooth. A cast washed with a thin solution of silex just before packing with rubber will produce a smooth and polished surface without altering the shape of the model.

Dr. Andrews seldom uses sections; uses one thickness of wax and does not use the blow pipe or spatula after waxing. This gives evenness and strength to the plate. Always use wax and plaster of Paris.

Dr. Jones uses mandrel for making cavities in porcelain teeth and uses corundum flour and water.

DR. C. H. DARLING'S DOUBLE BACKING FOR RICHMOND CROWNS.—

I use pure gold about No. 38 to 40 standard gauge. After grinding the tooth to fit the ferrule cut out a piece of gold leaving it long enough to cover the tip of the tooth at an angle of 45 degrees; cut the second piece a little longer so the solder will not join the two; do not rivet the pins, but use sticky wax to hold the backings in place until the crown is in the investment and then solder in the usual way.

I have found this rule when followed out to give good satisfaction after using it over a year, having had no trouble with checked teeth.

Gum Tragacanth to Assist in Gaining Suction for Upper Dentures.—In cases of flat and hard mouths it is often troublesome for the dentist to make the denture stay in place, especially if the patient has never worn one before.

Moisten the roof of the palate, and sprinkle it thoroughly with the powdered gum and insert it in the mouth, the gum being very sticky and perfectly tasteless, it holds the denture in place until the patient learns to use it.

DR. W. E. DADMUN: It is often a difficult matter to make a full upper denture work satisfactorily when the patient has only the four or six lower anterior teeth. I always try to impress upon the patient the value of a partial lower plate to be used in connection with the upper. But if only the upper one is to be made, in adapting the teeth to conform to the circle of the lower teeth, leave plenty of room for the lower teeth to pass inside of them without touching, thus preventing tipping at the back. Have the lower teeth bite upon a floor or shoulder of rubber built upon the upper plate from the pins of the teeth back about one-eighth of an inch or thereabouts. Also regulate the length of the bite with this shoulder, building it down toward the points of the teeth as the case admits.

The lower teeth biting as they do upon this floor extend a more universal pressure all over the plate, and usually prevent tipping.

In nearly all cases where the lower teeth are anywhere near the normal position and the patient has common sense, a plate made in this way will be a success.

Faulty articulation is the principal cause of plates tipping.

In articulating the teeth of full dentures care should be taken not to let the anterior teeth come into absolute contact. Let all the pressure be upon the bicuspid and molars.

After adjusting the two plates in the mouth and they seemingly articulate perfectly—to be sure of it take a thin right angle burnisher, tell the patient to bite hard, then try to force the blade of the burnisher between the teeth and try to turn the blade up or down. You will often find that the plates do not come together from equal pressure but from the unequal pressure of one side only forcing one or the other of the plates from the ridge and tipping it so that the teeth meet.

PROCEEDINGS OF SOCIETIES.

MINNESOTA STATE DENTAL ASSOCIATION.

St. Paul, July 8, 9, and 10, 1891.

The eighth annual meeting of the Minnesota State Dental Association was called to order by the President, Dr. M. G. Jenison, July 8, 1891, at 2:30 o'clock, P. M.

The President's address was then read.

DR. G. V. I. BROWN was called upon to open the discussion. He said :

Mr. President and gentlemen, I feel obliged to open the discussion in the stereotyped way. I am much interested in the paper because it deals with facts strictly important to us as dentists of this State. I would go farther and state that the paper is of particular interest to me from the fact that I know the gentleman who has just read it, and that he not only carries these things out in papers, but has carried them out in his daily practice and everyday life. They are not therefore the aggregation merely of theories and pet ideas arranged for the present occasion.

The first point is the attendance at meetings. I do not see in this day and generation how a man can practice without attending dental meetings—firstly, the meeting of the society in his own State, next to that, if he can, the societies in other States. But at

least he should meet with his fellow dentists once a year in his own State anyhow. He cannot fail to gather new ideas from an interchange of opinion and a discussion with his fellow practitioners. Reading journals is sometimes brought up as an excuse. A man says: "I haven't time to go to the dental meetings, but can stay home and read the journals." That is good in its way, but to-day I do not think we can take up the journals and the matter published in them, and select the best for ourselves, without knowing something about the men who are doing the talking, and writing these things. This latter of course only comes through personal contact with these men, and then we can place a correct estimate on what we read. We owe a duty to our State also, as well as to our profession. We owe it to the State to turn out once a year—and also to join the dentists in other States as often as we can. So much for our duty. The reference to the elevation of the profession was a good one. I think this association has a record during these nine years which fully entitles each and every one of us to a feeling of satisfaction. Unfortunately the dentists of this State are regarded very differently by dentists of other States, in many respects, than they were a few years ago. I will refer to this later on.

I have seen the advantage of the change in the constitution which is proposed, demonstrated very clearly several times. At the meeting of the Illinois State Dental Society a year ago there was very little else but wrangling. The meeting this year, which had the change or something similar to the one we propose, was one of the best I ever attended. It was just what we wanted from the start to the finish; there was very little trouble. I think it would be an advantage to this association to do away with business matters during the session. The clinics deserve attention which I do not feel capable of giving them. The perfect clinic has not been quite reached. Many men have told me they have not learned anything at clinics. I think that statement is going too far. The clinic always brings out ideas and discussion, and this is a good thing. But in most cases the true value of the clinic is lost as but very few can see the operation, and even what is seen is so disjointed that it does the spectator but little good. The only important point in their improvement would be a thorough discussion of the clinics afterward, following a good report. The exhibit is a growing feature of all our meetings. I am in favor of making it as much educational as possible. Its importance is only just begin-

ning. I think the exhibits as far as possible should be allowed to remain. We could in this way establish a sort of nucleus for what would eventually become extremely valuable to us. We now come to the consideration of the State law. That, of course, needs no introduction. We are all, each and every one of us, thoroughly interested. There are some points which I do not think are fully understood by the members. That is as regards the improvement upon the old law which we have. In the first place requiring examination of the graduates is a point of the utmost importance. The colleges throughout the United States have been coining dentists at a most disgraceful rate. The only way to put a check on these colleges is to examine the men as they come and treat them entirely on their own merits. If they have graduated properly those men can certainly pass a reasonable examination. The examination of this Board to-day is a better one than any given since the law passed. Some say it is a little technical, but then there are operative and mechanical branches which cut a large figure, and it is not possible for prejudice, or for any one man on the Board to influence very largely the result of any other man's examination. This can be very easily proven. The medical practitioner has been a great stumbling block. The average medical man can pass a better average examination than the average dentist. It is a good thing to have them excluded. Then there is a point I have heard brought up at the Illinois meeting lately in regard to the law which they are trying to pass allowing examination to everybody, claiming that covered the point. That is not giving the colleges a fair chance. While the Board is a check, the colleges are really the bone and sinew of the matter. They should be assisted. A man can do a certain amount of cramming easily enough and come up and pass a fair average examination, and it is well therefore to exclude such men. As to the assistance of the Board. It is a simple matter for the dentists in the State to sit back and criticize the Board. It would be impossible for five men chosen by the society to carry on the business of the Board without making some mistakes. Among the twelve Apostles chosen by the highest authority there was one who did not fill all the requirements.

There is a growing feeling outside against laws requiring examination of college graduates. A movement has been started in Philadelphia to have all the students graduating from one State

examined by one board. I do not care to discuss the merits or demerits of this, but do wish to say that we in this State are interested in the advancement of every other State. We should try to get other States to get a law as nearly like ours as possible. Every such law will help us. We have a dental college here. Firstly, we should be proud of our dental law here, and secondly, and a very close second, we should be proud of our dental college. It has taken a higher standard than any other college I know of. Students have been refused who could get in easily enough into other colleges. If they undertake to carry out this high standard we should assist them. The preliminary course is the very best thing I have heard suggested. The men who are going to take the dental chair direct from the plow, who are going to meet the highest quality of people, people who are to expose their sensitive feelings to the touch of those who have never handled anything else than a blacksmith's hammer or a plow—that is out of the question. It is by all means the most important year in the course, that which trains these clumsy people in the proper work. I shall induce as far as possible my students to take that course.

DR. BAILEY: I did not intend to say anything regarding this paper. It seems to me our president has very well filled the bill he attempted to fill, but in the discussion by Dr. Brown has brought up one or two things which set me to thinking. There was one thing in particular upon which I may speak better than others here perhaps, and that is the subject he declined to say much about, the movement on foot in Philadelphia to have the board declare who is competent to practice anywhere in the United States. I want to speak of this movement here, not because I think it is dangerous—I think it will meet with opposition—but I want to speak of it simply to put before the association the basis upon which the claim is made in our law for examining for practice in dentistry or medicine or anything else. The State is the sovereign; no other State can say anything about this State. It is the right of the sovereign State to declare who shall practice dentistry within its borders. Now for any one in Philadelphia to say who shall or shall not practice here, is like the Catholic people saying who shall be bishops here, it makes a stir. It will clear away a good deal of fog to say this. If a man has passed an examination in college and has his diploma, why shouldn't he practice? A man might pass the highest examina-

tion in Yale or Harvard or Johns Hopkins University and could not teach the lowest primary school in the State perhaps. The colleges give them their graduation in their particular school, and then they must pass before a board before they can have a right to engage in their business. Dentistry has simply placed itself on a level with all other business for that matter. It says, "All right, bring your diploma, but we shall be the ones to declare whether you are properly qualified to practice in this State." It rests upon a law that is recognized universally; to attempt to set it aside is simply going backward. The old rule or theory upon which people were formerly allowed to practice dentistry or medicine in this country is unique.

DR. DICKINSON: Even in Germany, where they have to take their seven-years' course, they have to pass an examination before being permitted to practice.

DR. BROWN: For fear of any misunderstanding that might be construed that I favored this idea, I will state that I simply wished to make the announcement of it. I do not think any of us would undertake to come down and go back to anything retrograde in its character. I thought the dentists should be forewarned, that is all, as the movement, I understand, is gaining a good deal of strength in certain quarters.

DR. SUDDUTH: I am sorry I did not get here in time to hear the paper read, but I have glanced over it. This point being discussed when I came in, regarding the State board and the opposition that is being made throughout the country, more or less, to State boards generally, is one of the most vital questions to-day before the dental profession, and I appreciate, I presume, as much as any other man here the need of hearty support to our State boards by the representative men of the profession throughout the country. This opposition, as I look at it, is raised by a certain class of colleges to a very great extent. It is not the individual members of the profession who are opposing, but it is the direct work of the vested right colleges, those that have a property and are teaching dentistry as a business. They are raising the standard of dentistry so that their graduates cannot get into practice in the States. I feel if we are going to advance or even keep the ground we have gained, that it is incumbent upon every dentist throughout the country to take a brave, bold stand, and not only stand but do something. I hear a great deal of criticism throughout this State by

dentists regarding our own State board that they are not prosecuting. "Here is Tom, Dick and Harry practicing, and I had to pass an examination, and these men are allowed to go free." I have read that law carefully, and it is not the duty of our State board to prosecute; they are to aid and give all the influence they can and to help direct these prosecutions, but it is not their duty to run around and hunt up evidence and prosecute. It is my duty and your duty to get the evidence and put it in the hands of the State's Attorney, and give the board the points and let them aid. The weakest point is, all our State boards have no funds. The fee of registration is not sufficient to cover the expense of prosecution. That is what is weakening the efforts of the board in the direction of enforcing the law. I cannot understand how it is that dentists refrain or somehow seem to be afraid to give what evidence they have to the board or to make complaint regarding men practicing illegally. It should be the duty of every man to try and raise the standard of dentistry. Every man lowering the standard hurts every other man in the profession. You cannot have too many good men come into the town. Every good man that does good work and charges good prices will help you, but every cheap man lowers the percentage of your own gains and lowers the standard. I would encourage and hold out the right hand of fellowship to every good man and support the board in their endeavors to put down every bad man, men who are not coming up to the standard of the law. A good many of our colleges are trying to do good work, and a good many are only running "mills," I am sorry to say. It is to help stem this tide of opposition that we should stand behind our boards. Before the meeting is over I shall have something further to say.

There is another point brought out in connection with the address, and that is in regard to our State institution here. I was very much pleased to hear it. I say "our." It is not a private but a State institution. We are trying to make a high standard and we want your support. We have taken a step in advance this year which I hope will meet with your approval. That is a preliminary course which looks forward to establishing a four year college in the State of Minnesota, and it is the first institution in the United States that has taken any step looking toward a four year course. It is going to stand or fall according to the support this State society gives it. I hope you have all received the circular

regarding the curriculum. It is based on this point, tutelage in the practical office, where the working qualities of the materials you are using are brought out—where you are taught to temper steel, for instance. A man should understand the working qualities of all his instruments. The training that comes from doing this work is the main thing. If I comprehend rightly the basic principle that underlies successful practice, it is first-class manipulative ability. Unless one has trained fingers, he never can be a first-class operator. The course we have laid down looks right toward that. The student commences with the round steel and gets the muscular training. Commencing with the heavier work and going downward to the lighter, the student is trained. A student's course is one largely of habit forming. If you have a boy that is talking of studying dentistry under 18 years of age, do not keep him in your office a year sweeping it out, but send him down to us. It will give him training in the finger exercises he needs, and training in his literary studies that will make a gentleman of him. I beg you will think over this matter and stand by us.

DR. MARTINDALE: I am much interested in this point. I look in vain for Dr. Davenport, whom I should like to hear say a word. I feel we need your assistance—your aiding and abetting everything this board undertakes. I trust you will not regard this child as an illegitimate one, but your legitimate offspring. We trust you will not expect super-human or exceedingly correct and always satisfactory results from their labors, because you must remember they are operating under the difficulties of a very new law, one receiving the congratulations of all the States. In Kansas they admit anybody to examination. This is not sufficient testimonial. Requiring first that they should be graduates is a good testimonial, but it is unfortunately found to be the fact that we cannot trust to the diplomas alone. It is not sufficient that your good will be hidden in your hearts. We want occasional words of good will from you. We crave your help and assistance. We cannot exist without that assistance which we think is our right and your duty. When our terms are expired we trust you will at all times give our successors the approbation, the assistance and the cheerful words of counsel so much needed. Because their road is not an easy one.

DR. REID: There are a good many more members here now than this morning, when the committee reported in regard to the work

of this State Examining Board. I wish, with your permission, to repeat what I had to say this morning. I met with the State Board on two occasions and saw their manner of working—their list of questions—and while the report and complaints have come to me in the last two or three years that they were unfair, that favoritism was shown to some, and that the list of questions asked were questions a great many members of the Board themselves could not answer, I wish to say here now to this society that there is no truth whatever in these things, and that while some questions were there I would not answer, I do say no young man just coming out of college should fail to answer any and all questions. I think their manner of examination is just, fair and right to the applicants, to the society and to the law. I think they have the moral support of all good men in the State. If not, they certainly deserve it.

DR. SUDDUTH: There is a good deal of criticism upon our State Boards, and the query is going around among the Journals as to who shall examine the examiners. The query came to my mind, if we do away with these State Boards, who shall examine the Professors, who gives them the gown, who is it constitutes the faculty of these private colleges? I offer this as a kind of foil.

DR. WEEKS: I want to call the attention of the Society to the article by Dr. Shepard in the July *Cosmos* and the discussion of it in the First District Society by such men as Abbott, Barrett, Guilford, Darby, and leading educators of the country, and to call the attention of any who may be at all in doubt in regard to the wisdom of our law in Minnesota to the opinions of such men. Dr. Shepard is not only one of the leading examiners of the country but he is also an ex-professor in a college. He is a teacher. From his standpoint as a teacher he is certainly competent to form an opinion in regard to such matters. Abbott is on record saying that he would vote for a law in the State of New York requiring the examination of all graduates of all colleges. It seems to be the opinion of all to give or relegate to Boards appointed or selected, made up of good men, the examining power. In regard to the Board in our own State, it is selected from members of the society. It is usually so, for the reason that nearly all the men who are qualified to act, are members of the society, and the qualification consists

in being educated men—that is, at the time our first law was formulated and the society had the matter of legislation in hand it seemed to be wise to make some line of demarkation. That line was that no one should be recommended to the Governor who was not a graduate of some standard college. It would be desirable to have men who have had experience as educators, but the trouble has been that nearly all educators have been up to a few years associated with private institutions, institutions run for profit. It is only within the last few years that endowed colleges have been instituted, institutions backed by the capital and moral support of the State. When the time comes that all dental colleges are under the wing of endowed institutions, and men are paid for their services as teachers, instead of depending upon the fee or tuition price, although it might not add any to their reputations still there would be no cause to fear their appointment working toward the advantage of any certain school. We are often asked about our institution as to how many students we have. The number seems to establish the standard. Not what kind of students or how good the men are, but how many. I do not think any one connected with this State institution will be accused of egotism in speaking about the aims.

The aim is not unlike that of other institutions that have the proper backing, it is to do away with the idea of numbers and to create as quickly as possible a barrier at the entrance to those unfit or unqualified to become capable members of the profession. You cannot divorce the dental college and the dental law; they are interdependent. We have not had much support from the profession until recently in regard to our students. A large majority of us have allowed the students to go away to their own alma mater without notifying them as to what we are doing here. But all this is now changing. With one little congratulatory remark I will close. I do not think the State Board will object to my saying that the eleven men who have been before the board from the University of Minnesota have passed as good an examination or better than any other eleven men that have passed before the Board. Now, if the profession of the State of Minnesota needs any evidence of what we are doing that ought to weigh very heavily, especially because the men we have graduated were not in every instance men we would have selected from fifty applicants presenting as the best. Some were men who entered under the old school

when the preliminary examination was not high. So we think we have every reason to feel proud, and I know that the Board knows that we all have reason to feel proud of the practitioners who have been granted the right to practice by this school. Now, gentlemen, we do not come begging. We only want all of you who are interested to see what we are doing and can do.

DR. DAVENPORT: There is a reason why there have been no failures. They have been right on the ground. We have found in every instance where we haven't shown any favors to the University of Minnesota, we have found the men right up to the mark in every particular. We treat all institutions alike, and where there has been failure in their colleges sending us men they will find it out and will endeavor to raise their standard and send us better men hereafter.

DR. BAILEY: Dr. Weeks said that the Examining Board was taken from this society. That was a question very carefully guarded in the forming of the first law, and I think in the second. They were not taken from the society. There may be just as good men not members of the society as anybody in it, and there is nothing in the law or the practice of this State that should warrant the charge that they took their own members. There is one other statement that was made, and that was in regard to the fact—I do not think it is so important but it is not obligatory—that a member of the Board should be a graduate from a college. The society has acted on that idea, feeling that a man to examine should at least himself have had the schooling which belongs to an attendance upon a college.

DR. WEEKS: My statement was that the board has been selected from the society.

DR. BAILEY: That is what I want to correct; it has not been selected from the society.

DR. WEEKS: The point I want to make is that the men who serve on the Board are society men every time.

DR. BAILEY: They were not when appointed.

DR. WEEKS: It states in the law that the society shall recommend. It is in the records of the society that no man shall be recommended from the society that was not a graduate. You will find it so. This is simply hairsplitting.

DR. BAILEY: It is not hairsplitting. I have been on the committees and know what was done. Dr. Twitchell, of Albert Lea,

was not a society member, but became so afterward. The point I rose to make was that the society has not confined its recommendations to the Governor to members of its own body for service on that Board. They have asked for men qualified to fill the position and are willing to take them from anywhere.

DR. BROWN: As a matter of fact the law does not require the man to be a member of this society, nor that he shall be a graduate, but as a matter of theory we believe there are better men in the society, and that a man cannot be such a very good man unless he is a member, and these men have therefore been generally chosen from the society. Still it is not well to give the idea outside that a good man, if not a member of the society, could not serve if chosen by the Governor.

The discussion was then closed.

Dr. Sudduth moved that the committees recommended by the president be appointed, and it was so ordered.

A committee was appointed to take into consideration the matter of changing the date of meeting.

The symposium on pyorrhœa alveolaris was then presented by DR. JERMAN, who said:

None of the papers were handed to me until night before last, when I was in bed and asleep. I will also say that on account of the time being limited I have been compelled to cut out some, but I do not think that I have left out anything that appertains directly to the answer of the questions sent out.

The report was then read, and the following discussion ensued:

DR. STEARNS: I would like to inquire if any man can report a case he has cured of this disease; I would like to shake hands with him as a curiosity.

DR. MARTINDALE: I would like to show you to-morrow such a case, although I have failed on more cases than I have cured. It may return, but I can show you a case that has been cured and remained so for five years.

DR. BROWN: I have one case upon which I have had the questionable pleasure of reporting adversely before the society upon two other occasions, but now after three years' fight I think the case is as nearly cured as possible. I would like to ask what constitutional treatment would be recommended with this patient. I failed to find anything out of the way with him. His general health

was good, no lung trouble, also his teeth were all in place and perfectly regular, and therefore no apparent cause. No catarrh, no rheumatism, and a careful expert examination failed to find any trouble with his urine.

DR. SUDDUTH: In the medical profession, if we get a patient out of the sick bed he is generally called cured. I have had a number of cases where I have succeeded in alleviating the symptoms and restoring the mouth to an apparently healthy condition. The answers to these questions are somewhat amusing, and exemplify what we all know to be a fact, that is, that two persons can never look at the same thing in the same light. The questions were certainly as explicit as it was possible to make them, and yet the answers show that they were entirely misapprehended in the majority of cases. I think a good deal of good can come from such questions, however.

The exception taken to the first question was, it is not a state of catarrhal stomatitis, because it could not be continuous in affecting the root membranes. In this disease the connective tissue is surely involved. In the second place it is a suppurative disease beyond question. In pyorrhœa alveolaris there is always a catarrhal stomatitis in the onset of the disease, and a thickening of the membrane. The trouble is we only look at the suppurative stage and call that pyorrhœa. It is impossible to have a case of pyorrhœa alveolaris without having inflammation of the mucous membrane surrounding the teeth preceding the condition present. That the disease is infectious there is no doubt. Micro-organisms have been discovered in large quantities. That the disease cannot be entirely cured in the sense asked us, is because the ligamentous attachment surrounding the teeth has been broken, thus allowing the saliva with its infectious organisms to enter the pockets formed. As to the word "Congenital" the question was, whether it runs in families, whether we can trace it down from father to child, and so on. I do not think there is any question but what we can do so. These questions, if they do nothing more, ought to incite us to make records and follow out the history of cases. Out of all the reports given, only one man, Dr. Patterson, reports cases; the rest speak in a general way. When in practice I did not follow out cases as I should have done; it is the only way to do.

DR. MARTINDALE: I would like to ask a question of Dr. Sud-

duth regarding the understanding of the word "Stomatitis." Does it not refer to the Greek word "Stoma," the mouth—that portion endowed with follicles?

DR. SUDDUTH: No, the roots of the word are "Stoma," mouth and "itis," inflammation. Meaning an inflammation in the mouth. As a rule the term is applied dentally to inflammation of the oral mucous membrane. I have used it in that sense in all my writings.

DR. MARTINDALE: Richard Dunglison in his dictionary says, "Congenital" means present at time of birth. I do not think it is used synonymously with "acquired" or "hereditary." I was sorry to be able to reply only from memory. I have felt, as I fear a great many have, my neglect in not keeping a record. I also stated that about one-quarter of my cases were combined with catarrh.

DR. LEONARD: If there is any one thing brought out, it is that there is no well settled idea as to what pyorrhœa alveolaris is, or what the treatment for it is. As far as my experience goes it has no connection with stomatitis whatever, and because we can allay the ravages of the disease I do not think we have any right to call it cured. I have yet to see one that was cured outright.

DR. BROWN: To illustrate exactly that point was the reason why I mentioned the case I did. The last time I saw the patient was after a lapse of about six months and there had been no return of the trouble. I do not think he will ever have a return of it. Previous and up to this time there had been a disappearance for a month or so, but after a lapse of about that period the trouble would be as bad as before. In regard to the treatment, I would like to hear a little more of the practical side. Usually it is advocated that the flap of gum which covers the pocket should be allowed to remain there and everything cleansed under it, and a new growth recur. But in my practice I have found that until that had been entirely dissected away, or had been absorbed and cicatricial tissue formed at the edge of the remaining gum the cases did not get better. The pus would continue to form so long as there was a pocket there. I am aware that this is directly against some very good teaching. I have many cases which would substantiate my position.

The following question was asked the Doctor.:

Q. Did you use mechanical means in cleansing first?

DR. BROWN: Yes, until it failed me, and then I used other

means. After that I used peroxide, sulphuric acid and other remedies.

DR. SUDDUTH: After the condition which we understand as pyorrhœa alveolaris, where there is suppuration coming around the root of the teeth, where there is a pocket, where the saliva has free entrance into this pocket, that unless we can establish an antiseptic condition of the mouth we will have recurrence of the suppuration. That stands to reason. So long as the saliva can find its way through the tissue you will have the suppuration. My line of treatment has been to first mechanically remove all of the tartar found around the tooth, set up an inflammatory condition there, then prescribe some antiseptic wash. I have found chloride of zinc about as good as anything. Give about 20 grains to 4 ounces of water, tell the patient to dilute that 4 or 5 times if it is too strong, and that can be used for a great length of time without injury. If you do not get healthy granulations, I believe in sponge grafting. Secondary tissue developed by sponge grafting is of the character of cicatricial tissue, and it binds. Antiseptics, until you get rid of the pocket, are very necessary.

DR. BROWN: For cleaning the pocket, the most useful thing I have found is the Dunn-Jenison syringe. I give it something to load it with—some pretty good antiseptic.

The following question was asked:

Q. Have you ever removed the diseased tissue as mentioned by Dr. Brown?

DR. SUDDUTH: Anything that prevents a free cleansing I should say, cut it away. As a rule you can cleanse thoroughly without trouble. Thorough cleansing is necessary; also healing from the base of the pocket.

DR. JERMAN: I would suggest that if this move is to be continued that the members of the society be more prompt in responding to communications sent out, and not wait until the last minute and expect a good paper. It is impossible.

On motion the discussion was closed. One hundred dollars was then appropriated for the use of the Minnesota State Board of Dental Examiners.

J. H. Thomas, of Crookston; Myron Barlow, of Duluth; R. H. Phalon, of Fergus Falls; F. L. Smith, of Anoka, and Frank C. Todd, of Minneapolis, were elected to membership.

The resignation of Dr. C. E. Hale was accepted.

Dr. C. A. Van Duzee then read the report on the clinics :

Dr. Cruttenden made the following statement in relation to the clinic report : Since leaving the clinic I attached the Fletcher furnace and obtained the same result as with the Hoskin's furnace and burner. I shall use it in preference in the future. I obtained heat sufficient to melt any metal desired and without going to the trouble of heating up the furnace. It will work immediately when you start your blower. This will lessen the expense of the burner at least \$10. The furnace costs \$3.50 while the Hoskin's burner, furnace and appliances with it, costs \$12 to \$14.

Dr. F. E. Twichell then read the following report regarding the Parker-Stoddard Furnace:

In the short time allotted me this afternoon, I shall endeavor to give you a brief description of the construction and uses of the Parker-Stoddard Furnace.

Many have been compelled to abandon the field offered by porcelain work, on account of the many difficulties attending it.

These have been partially overcome by the invention of a furnace, using gas as a fuel, aided by the foot bellows by which the porcelain can be easily fused.

Most of the furnaces, while doing the work well have been complicated in their construction, requiring expensive machinery to operate them.

The first gas furnace for the baking of porcelain, of which I have been able to find any record, was the invention of two Frenchmen, MM. Berge and Delheid, who in the year 1870 published the following description of it:

"This furnace, or rather blast lamp, is a modification of the Bunsen burner now in general use, but differs from it in the following particulars:

First, by the mode of admission of the air, which is made to enter below the gas and not on the same level with it, as seen in the Bunsen burners.

Second, by the admission of the large amount of air, and causing it to pass through the entire area of the tube, thereby producing a complete mixture of the air and gas.

Third, by the admission of an outer cylinder, so placed as to prevent the heating of the tube from which the flame issues by causing a current of air to pass between the two tubes.

Among the later forms of gas furnaces are those of Verrier,

Rollins, Land and Parker-Stoddard. Recently Messrs. Ash and Sons have introduced a gas furnace for the baking of porcelain, mention being made of it in Dr. Geo. Cunningham's paper before the Illinois State Dental Society; but whether it has been introduced into this country I do not know.

The Parker-Stoddard, or Parker Improved Furnace, as it is often called, is the invention of Drs. A. H. Parker and A. H. Stoddard, both of Boston, Mass. It was first brought to my notice about the year 1888, but was not placed upon the market until a year or two later. It makes a small, compact furnace, having a dome shaped top, using ordinary gas as a fuel, aided by the foot bellows.

The furnace is four and one-half ($4\frac{1}{2}$) inches in diameter, and about seven (7) inches in height. It is made of Russia iron, lined inside with fire clay, from the lower part of which projects three spurs, also of fire clay, which act as support for the slide upon which is placed the object to be heated. The top is dome shaped and made of fire clay, having an opening at the upper end through which pass the products of combustion.

The earlier forms of this furnace had a second opening through the side of cover which was closed by a plug, also of fire clay, by the removal of which the entire operation of baking could be easily watched with the aid of blue glasses. But this has been discarded in the later forms, the baking being done by time.

With the gas supply which we have it requires from five to eight minutes to fuse small articles, and from ten to fifteen minutes to fuse a small continuous gum case.

At the lower end of the furnace there is a tube nine inches long, extending downward, which is closed at the upper end by a piece of wire gauze to prevent the gas becoming ignited in the tube below; at the end of this tube are two smaller tubes opening into it, one being for the admission of gas and the other for the air.

About one inch from the lower end of this tube are four openings through the sides of it, which permit of an increased supply of air which is necessary to enable us to obtain the amount of heat required.

In the construction of all gas furnaces it is necessary to make use of the air blast obtained by foot bellows, rotary fans, etc., for the following reasons:

1st. To enable us to obtain the required amount of heat (about

2800°) necessary to fuse the porcelain, this would be impossible with the natural draft.

2d. The chief drawback of all furnaces using gas as a fuel, is the liability to gasing or the formation of bubbles in the enamel and body, caused by the absorption and elimination of the gas.

When bodies containing carbon, taking ordinary illuminating gas for an example, are burned with an insufficient supply of oxygen, there is produced a colorless gas called carbon monoxide, and it has been proven by experiments conducted by Rollins and Land that it is this gas that injures the enamel.

The object of the blast being to secure an excess of air, thus converting the carbon monoxide into the carbon dioxide, and rendering it harmless. With the gas which is used here for illuminating purposes, which is, as I understand, the so-called water gas, great care is needed, especially with large cases, when using this furnace because the quantity of carbon monoxide present in water gas is about three times greater than the amount found in an equal quantity of coal gas as the following analysis of the two gases, as supplied by the city of Brooklyn, will show :

	COAL GAS.	WATER GAS.
Carbon dioxide.....	0.0.....	0.3
Carbon monoxide	7.9	28.25
Hydrogen.....	50.2.....	30.3
Illuminants.....	4.3.....	12.85
Marsh gas.....	29.8.....	21.45
Nitrogen.....	7.8.....	6.85
	<hr/> 100.00	<hr/> 100.00

The tendency toward gasing is overcome in several ways: In the Rollins furnace a current of heated air is forced into the muffle, while in the Land furnace, a current of pure nitrogen is used in the same manner. As nitrogen is a neutral gas it does not seem to unite with anything, the porcelain coming from the muffle, is perfect in color and texture. In the Parker-Stoddard furnace, the danger of gasing is overcome by having a sufficient quantity of air to insure a perfect combustion of the gas. Before using the furnace, place the article to be baked upon the slide and put in the furnace, then gently fuse a current of air slowly turning on the gas until it ignites, then slowly increase the supply of air and gas. The case is soon brought to a full red heat, then lower the frame, put on the cover and slowly increase the amount of air and gas, and as the furnace becomes hot, a cone of flame is seen to issue from the

opening on top, and it is by this flame that the heat is regulated. The flame should be about two inches long and kept so during the baking, for when the flame exceeds that in length, the gas supply is too great and there is danger of gas in the case; but if the flame falls below two inches, it denotes that, either the gas supply is insufficient or the air blast is too strong, and should be regulated, as the case is being cooled.

When using the foot bellows for this work, a steady pumping should be maintained throughout the entire baking, keeping the reservoir on below just full, but if the bellows are pumped too hard the air is forced through the furnace in gusts, and it will lengthen the time of baking very much. The chief drawback of this furnace is the fusing of large bodies of porcelain without gasing, especially with the water gas, but for small articles it is perfect.

Before closing I wish to speak of a few uses to which the furnace may be put.

For the melting of metals for solders, plates, alloys, etc., it does the work quickly. A button of gold weighing 40 dwt. with 3 dwt. of platinum was easily and quickly melted. It is used for the heating of investment, for soldering, bridge work, crown work, partial gold plates, etc. It distributes the heat evenly, and if the heat is kept up long enough will flow the solder, though this is better done with the blow pipe.

To mend a broken gum section, hold the pieces together with a little sticky wax until they can be invested, using plaster and asbestos (half and half); when dry remove the investment, cleaning with a little chloroform, then mix a little of the body, which is sold with this furnace, with water to the consistency of putty, put a little of this between the pieces and press the place on investment, cover break on outside with a little gum enamel, place in the furnace and fuse.

When a pin is broken or becomes loosened in the plate tooth, cut off pin close and drill out the platinum and enlarge the hole, using a sharp, hard-tempered drill moistened with kerosene or spirit of turpentine and camphor, equal parts; do not use a steady pressure with a rapidly revolving drill, gently tapping where you wish to drill; a hole can be easily enlarged. Put a pin obtained from an old tooth, pack a little body around it and fuse.

DR. CORNWALL: The Land furnace for baking small articles is

now supplied with patent muffle, and the gas and air forced in all around. There is no chance whatever in it to gas the case. It seems to me that with the firebrick muffle it must lead to some such effect; that the porcelain is apt to become gased through the porosity of the muffle. I believe Dr. Land has just been demonstrating before the Connecticut State Society with a double muffle that he thinks will overcome the gasing of large pieces of work completely. The small midget furnace of his is a very satisfactory apparatus.

Dr. Claude Kremer then read a paper on "Oral Surgery."

DISCUSSION.

DR. LEONARD: Mr. President, I am afraid I am unfit to open this discussion.

I will take up this matter in the way of quotations from the paper, and then comment on them: "Dentists, as a rule, do not pay much attention to the soft tissues of the mouth." This I believe is true. I know there are a great many dentists who will perform very nice operations, dismiss their patient when the gums and teeth are in anything but a clean, healthy condition. I cannot understand how it is that a dentist will do this. I believe it is utterly impossible for work to last very long under such circumstances. I believe that the longevity of a filling depends as much upon its environments as upon the manner in which it is inserted. This is saying a good deal, but I believe you will all agree with me.

"When patients have trouble, they generally go to the dentist." This has not been my experience. The majority of cases with which I have come into contact were cases that I had either called the patient's attention to first myself, or cases referred to me by a physician, or where I had been called into consultation by a physician. I scarcely know one case where the patient came to me first for advisement.

"That to the dentist and not to the physician should cases of oral surgery be intrusted." Now, gentlemen, if you had a tumor in the mouth to whom would you go, your dentist or your physician? We all know that in order to be a good surgeon one must have a great deal of practical experience, and this the ordinary dentist cannot have. Hence he can never hope to be an expert surgeon.

"Dentists acquire skilful manipulative ability with instruments." This, I am proud to say, is a fact. There is no man on earth who should be so proficient or have so light a touch as the dentist. I have worked with physicians in cases of oral surgery, and have always noticed that in diagnosing cases, that the patient always manifested more pain generally when the physician was manipulating with the probe than when the dentist did. They do not seem to have the skillful touch.

"Dentists should be able to diagnose." This certainly is true. We should be thoroughly posted on oral surgery, so that when cases are presented to us we will be able to hold an intelligent consultation with our physician and give our patients intelligent advice. My idea of oral surgery is that the physician and dentist should work together. The advantages of such a course are numerous. In order to do much surgery you must have a great number of instruments. You all know this. The ordinary dentist does not have many surgical cases during the year, and it would not pay to lay in a stock of costly surgical instruments for one or two surgical operations during the year. Hence the advisability of working in connection with a physician. You have the theoretical idea of oral surgery and he has the practical experience in general surgery. Hence the necessity of combined work.

"That the laws do not protect dentists." This is a fact, gentlemen, that I deplore. They not only do not protect the dentist, but they positively prohibit him from prescribing certain medicinal agents in this State. This is something I have been harping upon for many years. I have called attention to it at Northfield and called the matter up at Duluth. I trust at this meeting we will take some step to bring about a more just recognition; to bring about a different law about prescribing; there may not be many who wish it, but that is not the question. If there is only one who so desires, that one should be so protected.

DR. JENISON: Dr. Martindale will state a case now and both matters can be discussed together.

DR. MARTINDALE: Mr. President and gentlemen, under the consideration of this paper, the case which has come under my hands during the last year—it was just a year ago this month—would perhaps be a proper subject for discussion. The case is one that was sent down from some place in Meeker county to a surgeon in Minneapolis. By him it was referred to me for treatment. I

examined into the case first, asking the patient the history. He stated that about a year previous to that time—the 11th day of July last year—in manipulating with a horse's neck, the horse had lifted his foreleg and hit him in the upper jaw. It loosened his teeth a little, but he thought nothing of it. After some time his attention was called to it by going out into a forest, where there were fires, and the heat and wind produced a sort of neuralgia, and also his eyes appeared to be troubled. It induced him to come down to Minneapolis. That much for the history.

Upon examination I found there was a slight discharge from behind the tuberosity of the superior jaw, and the discharge evidently of an ichorous and acrid condition. It had a sort of white cauliflower appearance at the opening whence the discharge preceded. I should also state that Dr. Weeks of Litchfield had extracted a first molar tooth about four weeks before the time I saw him, and had remarked a little pus followed it, and that the tooth came out easily. I drilled up through the vacant place, making a space about a half inch in diameter—larger than that, probably three-quarters of an inch. I treated it with washings of bichloride of mercury in solution with peroxide of hydrogen, during the intervals leaving the space packed with iodoform gauze. It seemed to be an efficient treatment. The discharge nearly stopped and there appeared to be only a sort of serous fluid. It did not respond as quickly as I expected. As this continued for two or three weeks, I commenced a change by giving up first the packing with iodoform gauze, and dusting the surface instead with iodoform powder and boracic acid. The cavity was enlarging toward the orbital portion of the bone. I obtained much assistance in washing out by a little device of our President, Dr. Jenison, a sort of wash bottle fastened over a couple of hollow tubes attached to a rubber bulb. Pressing on the bulb you obtain a constant pressure. Cure, however, was obstinate and slow. About that time he was expressing a desire to go east. I thought it might be good for him, and he went and joined the G. A. R. encampment at Boston. He returned in a bad way. He said he had gotten into the procession, and instead of resting had unduly exerted himself. As a result I ascribed the fact of the mouth being still pretty bad to his improper exercise. A couple of weeks after, the thing being still obstinate, I was led to expect there was a malignant tumor. He was suffering from severe neuralgic symptoms, and the measurements

toward the orbital region had become much larger; you could feel a portion of the eye itself. I think I then told him, you have not given me the exact and entire case. Have you had any cancer in the family? He then acknowledged his father had died of a tumor of the femur occasioned by a blow; that his sister had a serous tumor which had been removed and caused her death.

I said, you must have something very radically wrong there. I called in Dr. Clark Stewart, of Minneapolis, Dr. Dunn and Dr. J. E. Moore. Their united opinion was that it was a malignant tumor invading the whole territory of the superior maxillary bone, which should be removed. Now, should I have gone to work and cut off the man's head, or called in Dr. Moore, an exclusive surgeon, doing that kind of work all the time? I concluded that a general surgeon was a better man to cut off nearly a quarter of that man's head. About the latter part of August, Dr. Moore cut out the whole upper jaw on the left side, together with the palatine bones. I have the bone here; kindly use a little care in examining it as in places it is not put together very strongly. The operation was performed last September, and I saw the man two Saturdays ago. He was told at the time of the operation that it was a malignant tumor, and that the operation would only give him a new lease of life for a short time. He is doing pretty well now. It is affecting his brain, however, as the partition between the mouth and the brain was about a quarter of an inch only after the operation had been performed. The operation has given him the lease of a year's life and a chance to settle his affairs.

PRESIDENT JENISON: Dr. Kremer's paper and Dr. Martindale's case are now before you for discussion.

DR. EDMUND NOYES, of Chicago: I am happy to be here and make the acquaintance of the Minnesota dentists. This subject is not one upon which I can talk. Dr. Sudduth can say more in a minute than I can in a week. One or two of the points which have been suggested already seem to me sensible and worth perhaps a moment of further consideration, especially the one in respect to the undertaking of what are commonly called operations of surgery as distinct from the ordinary dental operations by most dentists themselves. It seems to me that these operations, the important ones, will in the end, and properly and naturally fall into the hands of a few men who prepare themselves carefully for this kind of work, and are fortunate or patient enough to acquire the reputation

which will bring the cases to them. This is the case in general surgery. The great mass of physicians in ordinary medical practice do not undertake very serious surgical operations, they prefer to transfer them to men who have a surgical aptitude, and as a consequence, a surgical reputation. This does not apply to a numerous class of minor and simple operations which might be called surgical. But it is both sensible and necessary that all these things that are serious and have moment, should be done by men who have the opportunity of making them more frequently than dentists. We make fillings every day in our lives and become skillful in every way, but no man who makes important surgical operations in which the life of the patient is in his hands, perhaps once in a year or two years, can be competent to make them; they must go to experienced men.

DR. SUDDUTH: There seems to be some misapprehension regarding the right of dentists to perform surgical operations. I think that so far as I interpret the law of this State and others with which I am familiar that there is no limitation on a dentist's right to practice surgery in the fullest sense of the word. As far as the law of this State is concerned it says, any person practicing medicine or surgery without first having obtained a license, etc. Then says, any person who shall append the letters M. D. to his name, etc. (reading) "provided however this act shall not apply to dentists."

If this does not allow dentists to practice, then I do not understand the letter of the law. Suits can only lie then in a question of malpractice. I should like to see the recommendation made by Dr. Leonard, that dentists get further recognition, become a fact, but there is no need for it, the field is open for us to enter in. There is one way to prepare, that is by the way surgeons do, obtaining the highest education in that particular way, attending charity cases, keeping your hand in. The dentist to make a specialty of oral surgery should be a man that has a hospital appointment where he would have daily and weekly practice and opportunity to perform such operations. Would it be advisable for a dentist to aim to attain that standard? I think not. A few men who have special liking that way and have time and money, they might do so. A dentist in actual practice has very little opportunity and little time to follow out those lines. But dentists should be more active in the treatment of minor operations than they are. There

is many a little surgical operation that can be performed by dentists that they should perform and not turn them over to physicians, because physicians as they generally run are no better prepared than dentists are. A major case you would want consultation upon. As far as the recommendations of the paper go I heartily approve; it is the right thing. As far as the matter of legal recognition is concerned, just as soon as the dental profession deserve it they will get it. In these United States all men generally obtain the level which they seek. The same in regard to oral surgery; if you aspire to become an oral surgeon, you will get there.

DR. LEONARD: In reference to the right of practicing oral surgery, I did not say anything about that. The essayist spoke about that. I am well aware as to the law. But as far as prescribing is concerned that is what I speak of. The dentist here is prohibited, or not allowed to prescribe certain drugs, and the pharmacists law covers that. I would like to ask Dr. Sudduth if after he operated and his patient should suffer somewhat from the shock, what could he do in prescribing for that? Would his prescription be recognized?

DR. SUDDUTH: That is hardly a fair test to ask me, because I have the M. D. degree. As far as D. D. S. is concerned, where I am conversant with the law, their prescriptions are filled the same as those of the M. D.

Q.—Are you acquainted with the law here?

DR. SUDDUTH: I am not conversant with the law in this State.

DR. MARTINDALE: The dental law does permit you to remove a jaw if you want to, and to prescribe. It says a dentist is one who shall be treating lesions of the human teeth or jaws, and in a syllabus of a decision by the Supreme Court you will find that the justice states, you may perform all operation upon the jaws, and such as by extensions of disease originated in the teeth, etc. In addition to exercising the privilege I took in the case I had under treatment I wish to say, that although there is no objection to cutting out of jaws, that the trouble is this; that if a man is going to continue in dental practice, making certain appointments to fill teeth, and he gets a broken jaw on his hands, he has either to give up his dental practice and go into surgery pure and simple, or he has to attend to his dental business and keep his appointments and let broken jaws alone. We know if we have a half hour appointment and are ten minutes late how restless the patients will

become. I desire to reiterate again that I am willing to prove what I say, that there is nothing in the law (because of a man being a D. D. S.,) preventing him from practicing or prescribing, nor in the pharmacy law either.

DR. CORNWALL: That part of the law Dr. Leonard refers to in speaking of shock, relates to a prescription in reference to alcohol, stimulants, etc. That will not be recognized by many druggists in this city. They will not fill prescriptions for either alcohol, brandy, whisky, gin or anything of the kind—rum and oil. That could be very readily tested if some D. D. S. would write a prescription for alcohol and send to Allen's here in town. I think they would not get it filled.

DR. LEONARD: I do not wish to cast any reflections, but I want to tell you what the law is. It is that a dentist's prescription for stimulants of any kind shall not be recognized. I made this statement at Northfield and Dr. Knight laughed at me. He afterward looked it up and stated to me that he owed me an apology.

DR. BROWN: I went before the judiciary committee on that same matter, and the wording of the law was so changed as not to interfere with the dentists' prescriptions. The law was settled there particularly, before the law was passed.

DR. KREMER: I possibly made statements in my essay which I knew were not exactly correct, but I did it for the purpose of provoking discussion and getting the opinions of gentlemen posted on that subject, principally upon the subject of recognition of dentists' prescriptions. I was very anxious to hear a discussion on that point, and I am sorry it has not been brought to a more satisfactory termination. There seems to be a little pulling and hauling one way and the other.

The subject was passed.

DR. JENISON: The next on the programme is the symposium on the subject of prosthetic dentistry.

Dr. Goodrich read the papers prepared on this topic.

DISCUSSION.

DR. CRUTTENDEN: I would like to ask if there has been any trouble experienced by plates splitting in the center?

DR. WHITING: I used to have patients who would break any plate I might make, in a few weeks or months. I tried different kinds of rubber. The Star rubber and black rubber, and different

kinds. I finally asked them once if they wore their teeth at night. They said they did. Asked them if they grated their teeth. They said they did. I requested them to stop wearing their teeth at night and they caused no further trouble.

DR. ROSENKREST: I made a plate for a full upper denture to match a lower jaw filled with natural teeth, but in the upper jaw, about where the two cuspids were, the ridge was very soft while the rest of the mouth was hard. The plate I made gave satisfaction except in front. The tissues are so soft and flabby that I haven't been able to make the rim around in front. I should like to know if there is any way of making a plate for this patient? If this soft flabby tissue might not be cut away. The plate gives good satisfaction except in front.

DR. SUDDUTH: My practice is to remove the extra gum tissue that is in the way. It is easily done and the plate sets much more solidly than to have the loose tissue there. I have had several cases.

DR. ROSENKREST: Trim off with scissors?

DR. SUDDUTH: Yes, you can take off with surgical scissors, and it is not painful at all.

DR. VAN DUZEE: Would you, Dr. Sudduth, feel justified in removing soft tissue throughout the entire extent of the alveolar arch and over the tuberosities? I have a case where the patient waited a year after the extraction. I placed a full case in the mouth, and in the course of a few months I noticed absorption was being carried on throughout the entire arch and tuberosities. I have called in consultation the best talent I had at my disposal, and nothing seemed to be available. If we could take away that flabby tissue with a reasonable certainty of the bony tissue remaining, it would perhaps be justifiable, but I am much afraid if we go in there we shall find that condition continue.

DR. SUDDUTH: If we are to have a firm base I would say to remove it. In this case where you have absorption going on so rapidly it is apt to continue, but I do not think in such a case I would feel justified in removing. I would not like to say though without seeing the case.

The subject was then passed.

DR. CRUTTENDEN: The committee appointed on resolutions beg leave to submit the following report:

WHEREAS, It has pleased Divine Providence to remove from his side the beloved wife of our brother Dr. T. E. Weeks, therefore

Resolved, That we, the members of the Minnesota State Dental Association, hereby tender to him our heartfelt sympathy, assuring him of our sorrow in his bereavement and praying for his comfort and strength in this the greatest affliction that can come to any man.

Resolved, That the secretary be authorized to have these resolutions properly engrossed and presented to our brother, and that they be spread upon the minutes of the association.

H. L. CRUTTENDEN,	} <i>Committee.</i>
LOUIS W. LYON,	
C. M. BAILEY,	

The resolutions were then adopted.

Dr. Cattell, of Chicago, then made some remarks anent the Dental Protective Association.

G. C. Andrews, of St. Paul; T. E. Twichell, of Minneapolis; C. D. Snow, Mankato; Claude Kremer, Mabel, Minn.; F. B. Kremer, Caledonia, and S. Bond, of Anoka, were elected to membership.

Dr. D. M. Cattell, of Chicago, was elected to honorary membership.

The name of C. R. Metcalf, of Duluth, was stricken from the roll on account of non-payment of dues and violation of the rules of the association.

The report of the clinic work of the morning was read by Dr. Van Duzee, and on request, Dr. Dickinson spoke as follows:

DR. DICKINSON: Mr. President and gentlemen of the society: This is entirely unexpected. I am glad of the opportunity, however. For many years, something over twenty I think, in my effort to find something that was reliable as a root filling, I have used everything that has been recommended.

I think that I can count up something like thirty different agents. My attention was called to what is called "Iodoform Paste," first recommended by Dr. Witzel in Germany.

The study of that preparation and experimentation with the agents that he suggested, led to a much simpler form which I prepared and use myself now, and have used for something over five years.

I will say, though, before I speak of its success, that I think I had probably average success in the use of the other materials for that purpose. Since using this simpler form of preparation the records that I have will show that my success has been very much better. I have not taken the time to tabulate the records so as to make them absolutely sure, but I know the cases where I have trouble now, are very much less in number than previous to its use. I have

no objection to informing the members as to the composition of this root-filling.

(The doctor here gave the formula.) I do not know as it is necessary for me to go into detail, as the circulars go into that and those of you that desire to use it can see for themselves.

I use the paste in almost every case of deep-seated caries as a pulp protector. It is a non-conductor of heat and cold.

I would suggest the use of copper points in connection with it to force it into all portions of the canal. In large canals anything you prefer can be used. As to the copper points, the first that I ever used of these was something over a year ago, and they are prepared by Dr. Gramm, of Keokuk, Iowa. The advantages of these over the tin points is that they are soft and flexible and will therefore follow a tortuous canal, but yet are stiff enough to keep their form and not curl up. Further, I have in many cases known where the pulp has been kept alive with this agent. I know positively that the pulps were alive by all tests that we have been in the habit of using to demonstrate that fact.

It is an absolute necessity to use the rubber dam and to sterilize every cavity. I neglected to say that I presume that Dr. Weeks of Minneapolis, is responsible for my having prepared that preparation of root-filling in its present shape.

He has been using it nearly all the time since I came to Minneapolis, and if any of you would like to know the practical results of it in his hands, I presume he will be very glad to inform you.

The subject was then passed.

DR. LEONARD, OF WASECA: I have a communication which I desire to have read.

The Secretary here read the following letter from the Attorney-General of the State:

ST. PAUL, JULY 10, 1891.

"M. G. Jenison, M. D., D. D. S., President Minnesota State Dental Society.

SIR: In reply to your question of this date, I have to advise you that the law does not authorize sale of spirituous or fermented liquors by a druggist from the prescription of a dentist. I am,

Very respectfully,

MOSES E. CLAPP,
Attorney-Gen."

The names of Drs. L. C. Davenport, of Duluth, and C. H. Robinson, of Wabasha were recommended to the Governor for members of the State Board of Dental Examiners.

Dr. W. C. Merrill was elected President, Dr. C. H. Stearns, Vice-President; Dr. L. D. Leonard, Secretary, and Dr. H. M. Reid, Treasurer.

Dr. F. H. Brimmer was elected Master of Clinics.

The officers were then installed and the president elect, Dr. Merrill, said :

Gentlemen, I hardly know what to say. I feel a good deal like the new convert in the Methodist meeting, his heart was too full for utterance. I thank you for the high honor you have conferred on me, in raising me to the position of president. While I feel that you might possibly have found a good deal better timber and some one more of an honor to the position, still I will endeavor to do all that I can to advance the interests of the society, and make it what it always has been, one of the leading societies of the west, and I shall endeavor next year, as in the past, to make you all feel that it is not only an honor to be an officer in the society, but a great honor to be a member of it. To accomplish these results I shall have to ask your hearty co-operation.

On motion the association adjourned to meet at Minneapolis on the second Wednesday of July, 1892.

MISSOURI STATE DENTAL ASSOCIATION.

The twenty-seventh annual meeting of the Missouri State Dental Association was held at Louisiana, Mo., July 7th to 10th inclusive. The following officers were elected for the year 1892: President, Dr. Geo. L. Shepard, Sedalia, Mo.; Vice-President, Dr. E. E. Shattuck, Kansas City, Mo.; Second Vice-President, Dr. J. T. Fry, Moberly, Mo.; Corresponding Secretary, Dr. Wm. Conrad, St. Louis, Mo.; Recording Secretary, Dr. W. M. Carter, Sedalia, Mo.; Treasurer, Dr. J. A. Price, Weston, Mo.; Board of Censors Drs. C. J. McBride, Perryville, W. H. Buckley, Liberty; De C., Lindsley, St. Louis, Mo.; Committee on Ethics, Drs. F. Slater, Rich Hill; E. B. Crane, California; E. W. Bear, Sedalia, Mo.; Publication Committee, Drs. E. E. Shattuck, Kansas City; W. S. Lowry, Kansas City; W. E. Tucker, Springfield, Mo.; Committee on Law, Dr. J. A. Price, Weston, Mo.; Committee on New Appliances, Dr. J. B. Vernon, St. Louis.

The next meeting will be held at Clinton, Mo., the first Tuesday after July 4th, 1892.

WM. CONRAD,

Corresponding Sec'y.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITORS:

LOUIS OTTOFY, D. D. S.

L. L. DAVIS, D. D. S.

C. N. JOHNSON, L. D. S., D. D. S.

SOCIETY WORK.

At the recent meeting of the American Dental Association a member of the profession who had gone some distance to attend the meeting was heard to remark after the first day's attendance that he saw little likelihood of gaining any benefit from the meeting and concluded that he could put in the time to better advantage at home in his office. And forthwith he left the meeting.

We may be forced to admit that those who were looking solely for practical points which could instantly be changed to dollars and cents must have been disappointed with this meeting. We may go even farther and say that for the best interests of all concerned it might probaby have been better had there been a greater diversity of subjects and had those of a practical nature not been so entirely crowded out by matters strictly scientific. And yet the prime office of a dental society is not to instruct men in the use of this or that little device to the sole end that money may be made more rapidly. Dental societies were organized for loftier aims, and the man who attends them in the proper spirit will receive a benefit far greater and more lasting than can well be measured by money.

In the first place he is brought face to face with the brightest minds in the profession, for it is undeniable that the best men are those most active in society work. He receives an inspiration by contact with kindred spirits and broadens himself beyond the petty details of routine practice. No matter how carefully a man may read the literature of his profession he always lacks something of being professionally rounded out unless he attends societies. There

is no personal magnetism in the report of a dental meeting, but there is in the meeting itself if the right kind of men are in attendance. And almost always there are enough men of the right stamp to make a meeting interesting to those who are really seeking to be interested.

The greatest drag on dental societies is the attitude of just such men as we have quoted at the beginning of this article. The proper thing for a man to do if he considers a meeting devoid of interest is to throw the weight of his influence in the direction of arousing interest. Let him contribute to the programme himself instead of standing to one side and waiting for others to produce something that is calculated to entertain him. Some members of the profession delegate to themselves the privilege of attending dental meetings whenever it suits their convenience, and placidly looking on and absorbing all the knowledge they can—usually consisting of any practical points—without the slightest idea of attempting to do anything for the society themselves. And these are the men who cast reflections on dental societies if matters are not conducted just to please them. There is a vast degree of inconsistency in the attitude of these men, and for their own sake and that of their friends we advise a change of grace. Dental societies are open to all reputable men, and while there are many reputable men who are not calculated by nature to do much of the executive work of societies yet we can scarcely conceive of any man so constituted that he cannot be of material advantage to a society in one capacity or another. He can at least say a word of encouragement instead of saying a hundred words of discouragement.

Societies have probably done more than any other one agency in advancing the profession, and every man who earns his living by dentistry owes to them at least his respect if not his active aid.

C. N. J.

EXTREMES IN PRACTICE.

We cannot help wondering sometimes if there is any other class of men so given to following extremes as are dentists. Fadism might consistently be called the prevailing evil of the profession. Almost every line of practice that has anything good in it, and very many with little else but bad, have at one time or another been carried along on a wave of popularity, high above their normal

level, till meeting the sea wall of criticism and experience they have either been dashed to pieces or carried out of sight by the undertow of prejudice. In many cases the good they possess is as completely lost sight of as if it never existed. The moment a method receives the seal of approval from a few prominent men it spreads like wild fire; the moment it begins to lose favor it loses it on all sides. To use a homely expression it is either "whole hog or none" with the majority of the profession.

From the fact that the evolution of methods and the discovery of proper lines of practice must depend upon poor humanity, we should not be too much surprised at such things, and yet we can not forbear calling attention to the fact that in most matters of this kind a "happy medium" is more logical than too much enthusiasm or too much doubt. There are very few methods which have carried weight in the profession but what have something commendable in them. Cannot the profession bring themselves to judge calmly of these things to the end that the good be retained and the bad discarded? We have a perfect right to be suspicious of each new fad for too many of them have alas proved delusive, but this should not blind us to a healthy reform nor prevent us from appropriating to our use that which is shown to be permanently beneficial.

To give a case in point: Copper amalgam was the craze a year or two ago. It was on everybody's case, in everybody's mouth, and on everybody's tongue. It was used ill-advisedly, nonsensically, and almost criminally. Of course it could not stand such a test—no filling material could. And now the poor inoffensive material is in danger of the undertow.

It would be folly to claim that copper amalgam ever possessed one-half the virtues that have been attributed to it. Neither is it deserving of the censure (we had nearly said cursing) that it is now receiving in certain quarters. Copper amalgam has its legitimate place in practice, but that place is seldom on the occluding or proximate surfaces of the teeth—unless it be in children's teeth or in the third molar. The cases which call most strongly for copper amalgam are large cavities on the buccal or lingual surfaces of molars, and we know of no material so reliable in these cases. Gold cannot always be used to advantage, and the ordinary amalgams are usually more unsatisfactory in these cavities than in other places where we feel called upon to use them. Copper amalgam

will not change form—at least not perceptibly—and is therefore a good saving agent. If a filling changes form—and we are never quite sure that a silver amalgam will not—it is more disastrous in a buccal or lingual cavity than elsewhere.

Let us use copper amalgam then wherever it is indicated, but let us use the best that is made. The influx of a vast amount of poor material on the market at the time of its greatest popularity is more responsible than anything else for the tide of opposition now setting in against copper amalgam. Good material is the only safe material to use in any kind of practice.

C. N. J.

LOCAL ANÆSTHESIA.

In experimenting to ascertain how weak a solution of cocaine could cause anæsthesia, a German physician has discovered the remarkable fact that pure water when injected under the skin, has an anæsthetic effect, causing insensibility of the tissues for several minutes. The effect of the water is to create a slight swelling, resembling that caused by the sting of a gnat. The space marked by the swelling is insensible to pain, so that incisions can be made without causing discomfort. Our views of the various local anæsthetics, and injections in which water is the medium of solution, will have to be considerably modified, if the views of this investigator are confirmed.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

To the Editor of THE DENTAL REVIEW:

August in New York City is the month of all others for outing. The better class of the public are so largely away at this time there is little demand for the favorably situated practitioner and he can easily pull down the shutters and go whither his tastes lead him. Some go away for the entire season from July to October, others for short stays, keeping an eye on the office and taking some one of the entire months. There are so many enjoyable places in and about New York, a good deal of healthy recreation can be easily and inexpensively secured, thus making a stay of the entire season in town comfortable. But it is a fact that *change* is beneficial to all natures

that are engaged from day to day, and if possible, all are better for it. Associations among the people of other neighborhoods than our own are beneficial, an exchange of thought is helpful in more ways than one. In these days of free thought there is opportunity for all caliber of mental activity. We can get and give, and this brings development, this is the only way the world can get on, it is the only way it does, and it will get on if we are lazy, but to be a contributor to its development is a pleasurable occupation. It makes us estimate ourselves higher and justly so. No one thing does the world so much good as rubbing together. The heaven is made more active.

Every one that mingles in professional association goes back to his office a bigger man—or ought to. A personal acquaintance is of much value. We get a better grip of what we see in the journals when we have seen the writer. On this ground, we do not think it out of the way to see a face in the frontispiece of our journals. I felt like thanking Dr. Barrett for letting us see Dr. Miller's face, for we had not been fortunate in meeting him, although we had corresponded with him. The fraternal movement commenced with Dr. Atkinson's open office at the house of the late Dr. Wm. H. Allen, 18 West Eleventh street, in 1862. Dr. Atkinson always called him "Sweet Willie." It was not an undeserved term. Dr. Allen was a brother of Dr. C. C. Allen, for many years a successful editor of the *American Journal of Dental Science*. In size and energy the REVIEW resembles it more than any journal we have. Dr. Dwinelle, the veteran practitioner of New York, and president of the Odontological Society was at one time an editor of its pages. In many instances he cut the engravings that illustrated its pages. It is said that the younger ones smile as the doctor catches on to the so-called "new things," that hop up in our meetings. When you see him come in with that cinnamon-colored covered book, you may bet your last cent that he is going to take the wind out of some one's supposed discovery, and when he opens these journals from way back he has the dates, and that settles it. The doctor was what Hungerford called the REVIEW, "a Hummer" in his earlier days. These valiants have, and are passing on and over the border line, and we cannot speak their praises too often. We wish them a peaceful and hopeful entrance into port, but alas, how varied are the careers of many. Dentists are like the mass of mankind, their journeyings are often checkered and at the end they

falter and become weary, intermingled with some disappointments. We think the least we apply human judgment to them, the better. We do not see *all* that underlies the frothing of human experience. We regard it with favor that our calling is generally organized. The one thing we need, is to be guarded in the use of power. It is common that strongly intrenched organizations are quite sure to become not only partisan but arbitrary, and this awakens friction that is in danger of generating ill-feelings. Every worthy and intelligent worker is needed in the work committed to our care. The one thing that is more needed than another is *wise* legislation. We believe all our bodies can think best on a liberal basis. The politics of our bodies are in great need of care.

"Politics" are not necessarily a synonym of unfairness or of sharp dealings. All they need is a moral guide. This world would not have gone on so well as it has without a moral governor; there is salvation in none other. There is a heart in all bodies, and it is essential that we keep it throbbing with active, fraternal regard for all.

The meetings are now over for the season, and soon the autumn months will find us revived with bodily and mental vigor, better prepared for active duties. Our (North) American body has convened, showing some evidence of taking on energetic purposes. I don't know how it will work to have a double-yoke president, but he is a man of "high degree;" he has thirty-five or forty of them, and so far he has not shown any slack line. He is a great walker. He always gets there, and then he's no light weight, one of those that can't be knocked out easy, and we suppose it looks all right to keep up a *South* American body, especially to those that are looking that way, not that it is possible that there can be any sectional feeling, we do not think, but we do think our American body would be a stronger compact if it was honored by the entire compact of States. Our interests are one and we predict they would be enhanced by the union, "United we stand." Can't this be made catching? Southern men are ambitious, and put it to good uses, and they are a social being, and of that we cannot have too much. These things we only are saying as hints. They are in the air and so we voice them.

What is going to be done to revive the interest of so many that *were* annual attendants of our meetings? It would be an easy task to give a hundred names that have been identified with our

national body, but have dropped out. Much of the reputation they have gained with their fellows was by their fraternal communings. This is not only noticeable in the annual meetings, but has been freely spoken of regarding our local ones. A very small number of the New York and Brooklyn members are taking an active part in the meetings of the month. It has often been queried by visitors during the last three years, "Where are the men that have figured so much in dental matters?" To be sure we have younger men, and bright ones coming in, but these we refer to do not attend. We do not feel that the month has gone well unless we have attended all the meetings in our vicinity and read all the journals. We have no temptations to relinquish this pleasant duty. We don't wish to come in at the end of the race limping. Dr. Atkinson's last months of great sadness were greatly brightened by the active associations he kept up until the last. He often expressed pleasure to us and gratitude that he had such a hearty interest in our profession's welfare.

We noticed the article in the last *Dental Advertiser* sizing up the life of Dr. Atkinson. Some of its conclusions we think way off. We do not think that the profession had but a small comprehension of Dr. Atkinson's influence or value, yet it will be seen later. The comparison of Drs. Varney and Webb with him, making the former the greatest; they are not to be mentioned in the same category. None excelled them in the field they so brilliantly labored in; their work was mostly finger craft. Dr. Atkinson's work was vastly more, added to the finger craft his teachings and practice made our services immensely more satisfactory and salutary.

It is but little understood why he gave himself so devotedly to his calling, passing away without the accumulative riches of this life, and it is reiterated frequently that "With all his ability he did not get rich."—He was poor for our sakes.—This will appear plainer in the future. The late Dr. Searle of Springfield, Mass., said to us but a short time before his own demise, "If I had Dr. Atkinson's ability I would make some money out of it." "No," we replied, "not with your temperament." It is common for us to think we can do the thing that the other fails in. We do not "see ourselves as others see us." So it has proved in the effort to teach the public what they need to know about dentistry. The public don't teach as well by indiscriminate methods when they see the pro-

noun "I" in it, without any responsible signature attached to it. The only advertising that pays under the guise of teaching the public, is that which has one's name in full, with your address in full also; then if one is skilful and sincere in his purposes no one is hurt. The next best way, we think, is for societies to make a good Digest and publish it in the name of the society; select some one who has ability to talk in language that the public will or can readily understand. There is no law against any one's doing this over their own name, or there ought not to be, but it does not produce pleasant feelings when one does it clandestinely.

We may expect to hear something on this subject, as there were committees appointed to consider the matter by our American and Southern bodies, and doubtless they will report through their published proceedings soon. If any one is really desirous of entertaining the public, write a *good article* easy for the public to catch on to, and possibly some enterprising newspaper will be wise enough to use it. We have known such things happening. We believe more of our dental literature would find its way into the columns of our newspapers if the authors would keep in thought the needs of the public. Too many writers just talk about "ulcerated teeth" and "dead teeth" and making a "good job." Better try and climb a little higher.

We wonder if there is another new book or system of dentistry. We notice the copyright act is attached to some late articles. We don't think they will hold water. Some of the older savants are already putting on a smile with a word, that fellow is a little young to be preaching such doctrines. They would get active attention if such articles were strained through our societies. Well, young men are ambitious, and if they are of good stock they will profit by the criticisms they will receive. It has been suggested lately that it should become the study of persons appointed to stimulate more local action. We think this might be done with profit. There is a sad need of improvement in the morale of practice among the rural districts. This will strike some with surprise and what is to be understood by the *morale* of practice? There is a moral aspect in dental practice. We think it against the moral purpose of a humanitarian calling to so practice upon the public as to enhance the difficulties already surrounding them. We speak more particularly of the working people in the manufacturing districts. They are, of course, limited in time and money and health. They are too

much neglectful of their teeth and their mouths in a general sense, and it is too true that they do not have any ambition to do anything better than to let them go to ruin, of teeth, and often much of bodily health, for they do not get advice to something better. The forceps rules these territories so illy, often destroying all that is divine and what could be preserved; a pleasant face with youthful expression. Not only defective teeth, often slightly so, are easily sacrificed, but advice is given to have the remainder removed in favor of Biled rubber and cheap teeth. It is not an uncommon affair for fifteen year old lassies to be seen glorying with a full set of "store teeth." These things ought not so to be. We all know what will be said in answer to such a charge against the rural practitioner. "They won't pay" but they do pay in money enough to encourage an ambitious young dentist to *try* and encourage these young people into better habits of the care of their bodies. What is our calling, nothing but a business? A newly born dentist has in such communities a hopeful opening for practice, for beginning. Too many, we know, do not wish to take time to begin. Here are fields in which to magnify "the importance of our calling," and by doing this kind of service for a period of years at the beginning, it will stimulate in one's self the proper appreciation of his calling. The "Advanced School" of practice is much in need of emphasis all along the line and certainly an attempt more zealously in these much neglected parts of the country. We do not speak without knowledge and a good deal of observation. This fractional care of the mouth and teeth is a costly method and it *does not* save teeth in any such per centage as it is possible. Young men can, of all, start out on a better line of practice, and do it with future profit, rather than present.

But their present needs are little compared with their future. They themselves have not developed, and they require but little to what their awards will be in a higher state of development. "A highly evolved man is an expressive animal," was a remark by one of our friends, and this is true, but we hear it said, "these people are so ignorant," We give the following quotation for consideration from one who has worked hard from the bottom round of the ladder: "It is a noble ambition to endeavor to conquer the world by intelligence, with all the difficulties that one meets, knowing well by example of those who have become discouraged, that time alone can consummate the victory, if victory there be."

Dr. Barker's paper in the last number of the *International* on "Fees," is commented upon here. He has treated the subject freely and fairly, it being so difficult a matter to adjust. Any consideration of the subject is noticed. While this paper has attracted the attention of practitioners, it does not seem to be a satisfactory adjustment. So far as our calling mingles with medicine and surgery, it cannot arrange fees on a mercantile basis. Physicians cannot, and do not. Humanitarianism is not a commodity that can be purchased with dollars and cents; skill and demand, it seems to us are the only two elements that can be considered as a true measurement of fees. Dr. Atkinson was preëminently entitled to exceptional fees. Accepting the fact that he was preëminent for skill, no one among us was so zealously devoted to the service of his patients. Everything that he believed could contribute to the patient's benefit, he provided without stint of time and money. He was truly a "minute man" on deck at all hours, *i. e.*: always ready to be called and always equipped for any emergency, not at all in a conventional way, all he needed was the call. His ability was procured by the largest expenditure of all that entered into cost. In this sense he made an investment that was entitled to a larger income. He was "highly evolved" and hence he was an "expensive animal." In our estimation, judging from a large observation, he was the poorest paid practitioner, considering what he did for his patients. It is true he did receive some large fees, larger than the ordinary. On the other hand he did a very large amount of gratuitous work. We consider it very uncomplimentary to his intelligence to say he charged according to "his caprice." It is said he sometimes charged "exorbitantly high" and at others he charged "ridiculously low," for he often said, "If I charge what this service is worth, it should be so much," holding to the idea that the patient should know that he had given them valuable service, although he took nothing. Comparing Dr. Atkinson's fees with the ordinary practitioner, his services were the cheapest. We say this on the basis that *skill* brings the largest profits to the one that receives it. We leave this subject as we propose to discuss Dr. Atkinson in his relation to the value of his life to his profession, and to his patients, at some other time. We only add that it is our natural belief that *skill* and *demand* are the two prime factors on which to base our fees.

Ex.

New York, August, 1891.

LET US HAVE CREDIT FOR WHAT WE ARE.

To the Editor of THE DENTAL REVIEW :

SIR :—Must the practitioner of 10 to 15 years' experience enter the Dental College on the same equality with the youth of 18 or 20 years of age, who has not so much as acquainted himself with the dental office, to say nothing of practical dentistry. If practical experience is of no value, then the practitioner of 10 or 15 years' practice knows no more of the principles of dentistry than the raw recruits from the country or the shop. One thing I would like explained : a few years ago the announcements of the various dental colleges, considered five years' practice equivalent to one course of lectures, and any dentist of five years' experience, who wished to enter could do so, and graduate after attendance upon one course of lectures, and to-day some of the one course graduates, constitute a part of the faculty of some of the reputable dental schools, and I would like to know why this is so, when practitioners of equal ability now are required to attend three regular courses before receiving the degree. A great many dentists in practice to-day would obtain the degree if there was a reasonable opportunity for them to do so, but few are able to afford the time and money necessary to take three courses of lectures "if such was necessary."

Let some one prescribe a remedy for this evil, let others express an opinion on this question.

J. M. GALLEHUGH.

CHENOA, ILL., September 8, 1891.

FOREIGN CORRESPONDENCE.

THE AMERICAN DENTAL SOCIETY OF EUROPE.

To the Editor of the DENTAL REVIEW :

SIR : The eighteenth meeting of the American Dental Society, of Europe, convened Aug. 3d, at Heidelberg, with Dr. Patton, of Cologne, President in the chair. After routine business was disposed of Dr. W. Mitchell, of London, was called upon to read his paper upon "A few thoughts upon personal dental education," wherein he expressed his belief that too little attention was paid to the

selection of material for the coming dentist, preceptors allowing almost any aspirant for dental honors to become his pupil irrespective of natural capacity or previous educational advantages, the tendency thereby being promoted for lowering the standard of personal tone of the profession; this in connection with the absence of definite lines of procedure in the early training of the student, combined with the subsequent random statements made in societies went far toward promoting and developing an instability of ideas, that were ultimately reflected throughout the career of many men.

The paper was discussed and a desire expressed that the examinations and requirements of American institutions of dental learning should exact in reality what they profess to in their announcements.

Dr. Witzel, of Muelhausen, read some notes upon the use of chloride of ethyl, as a local anæsthetic, showing satisfactory results. The discussion of this subject showed that having used it, quite a number could testify to its merits.

Dr. Davenport, of Paris, read and elaborated upon a paper upon "Articulations." The paper showed quite a careful consideration of the subject, and was freely discussed with much benefit to those present.

Dr. Bryan, of Basel, read some notes upon the articulation of gold cap crowns, possessing many good points.

Dr. Eugene Miller, of Chicago, presented for examination a method of preparing metal crowns. The display while novel, displayed more courage than judgment, the process being quite crude, and its application evincing an inability to appreciate and realize artistic results.

The effect of amalgam fillings in contact with gold crowns cropped up; opinions differed as to the effect produced, the majority believing that derogatory results were promoted by their contact. Dr. De Trey, of Basel, read a paper upon dental hygiene that was a valuable contribution to the meeting. Dr. A. V. Elliott, of Florence presented some thoughts upon "Emergencies."

Dr. L. J. Mitchell, of London, presented a model illustrating a new and very practical method of making bridge work, which showed a correct appreciation and application of underlying principles connected with this important branch of dental practice. Professor Miller, of Berlin, discoursed upon microorganisms in the

air in his usual interesting and convincing manner. Owing to his inability to secure suitable accommodations, his lantern exhibit had to be omitted from the programme.

Many novelties in the way of methods and appliances were presented. Dr. Bryan, of Basel, presented instruments for the rapid regulation of teeth. Dr. W. Mitchell, of London, presented a new right-angle hand piece which evoked much interest, being simple and effective; also contour forceps for contouring the faces of metal crowns at one operation.

The papers and appliances evoked much comment and healthy discussion.

Dr. Bryan, of Basel, was elected president, Dr. C. W. Jenkins, of Zürich, secretary. The next meeting will convene at Basel the first Monday in August, 1892.

"78."

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DESTROYING PULPS.

To the Editor of the DENTAL REVIEW :

SIR:—What is the safest and best method of destroying a pulp, whether aching or not, at the time of the application of arsenious acid, in such a manner, that no pain or at least not intense or constant pain, follows the application of the drug? In cases where it has been impossible to make the application directly to the pulp, and even in those where it was possible to make direct application such severe pain has followed that the patients would not endure it, but had the teeth extracted by other dentists. I have used every known method, without obtaining as satisfactory results as should have followed the employment of methods recommended by prominent dentists.

Yours truly,

PRACTITIONER.

[Will readers of the REVIEW please report their methods of overcoming these difficulties.]

MEMORANDA.

The report of the meeting of the Wisconsin State Dental Society published in the September REVIEW was from the pen of Dr. Edgar Palmer, of La Crosse.

Most of the dental colleges of the country have commenced their sessions during the past month; from all reports there is an increased attendance this year.

A simple way to secure a good impression of a prepared cavity for an inlay is by the means of gutta-percha, not the red tenacious gutta-percha, but any of the white pellets; do not dry the cavity thoroughly, and the impression can be withdrawn, obtaining a copy of even the deep undercuts or retaining points.

An American dentist by the name of Young has played a prominent role in connection with the recent differences between Queen Elizabeth of Roumania and her husband. It appears that he has formed part of the royal household for several years and that his influence on the impressionable "Carmen Sylva" was almost as great as that of Miss Vacaresco or of Mr. Scheffier, her Majesty's Alsatian private secretary.

SOUTHERN ILLINOIS DENTAL SOCIETY.

The sixth annual meeting of the Southern Illinois Dental Society will be held at the Allerton House, East St. Louis, October 20, 21 and 22. A cordial invitation is extended to all members of the profession.

W. E. HOLLAND, *Secretary*,
Jerseyville, Ill.

AMERICAN ACADEMY OF DENTAL SCIENCE.

The twenty-fourth annual meeting of the American Academy of Dental Science will be held in Boston, on Wednesday, November 11, 1891, at 3 p. m. The annual address will be delivered by George S. Allan, D.D.S., of New York.

E. N. HARRIS, *Corresponding Secretary*,
248 Boylston St., Boston, Mass.

ANÆSTHETIC.

A dentist, whose stories are always founded on facts, tells of a negro who came to him with his wife to have one of her teeth extracted.

Gas being something whose mysteries added to its charms, the solicitous darky questioned: "Couldn't you give her suffin' a little milder'n gas, doctah? Couldn't you give her gasoline?—*Pharmaceutical Era*.

OHIO STATE DENTAL SOCIETY.

The Ohio State Dental Society holds its next annual meeting in the City of Columbus, on Tuesday, Wednesday and Thursday, December 1, 2 and 3, 1891.

No pains will be spared to make this in every way an attractive meeting, and a cordial invitation is extended to members of the profession throughout the country to be present. Ample accommodations and liberal inducements will be given for the exhibition and demonstration of new and useful appliances, instruments, etc.

The geographical situation of Columbus, its extensive railroad connections, make it readily accessible from all directions. Arrangements have been made with Central Traffic Association for reduced railroad rates by the certificate plan.

E. G. BETTY, *Pres.*, Cincinnati.

OTTO ARNOLD, *Sec'y*, Columbus.

SOME LIFE STATISTICS.

An eminent statistician of Germany has recently given out the following as general facts, proved by vital statistics: The average length of life is 37 years; 25 per cent of mankind dies before attaining the age of 17. Of 1,000 persons only one reaches the age of 100 years, and six that of 65 years; 35,214,000 die every year, 96,480 every day, 4,020 every hour, 67 every minute. The births amount to 36,792,000 every year, 100,800 every day, 4,200 every hour, 70 every minute. Married people live longer than the unmarried, and civilized nations longer than the uncivilized. Tall persons enjoy a greater longevity than small ones. Women have a more favorable chance of life before reaching their 50th year than men, but a less favorable one after that period. The proportion of married persons to single is as 75 to 1,000. Persons born in spring have a more robust constitution than those born at any other seasons. Births and deaths occur more frequently at night than in the daytime.—*Exchange*.

DRAWS PICTURES WITH HER TEETH. PECULIAR ACCOMPLISHMENT OF A BEAUTIFUL GEORGETOWN, IND., MAIDEN.

At Georgetown, Indiana, twenty miles from a railroad, twenty-two years ago Flora Staple was born. Since that time she has been more helpless than a babe, having no power of motion except the perpendicular movement of her jaws. During all these years she has taken nourishment only in fluid form. Strange as it may appear it is a fact that she has grown to be very beautiful and of perfect form, except for a slight curvature of the spine. Her power of speech has been developed, and she reads and speaks the English language fluently and correctly. Two years ago she was brought to this city and witnessed the parade of a large circus. Seeing a large elephant, she informed her mother on returning home that the sight of it had made an impression upon her mind that she would never forget, and that she believed if she had some pliable substance she could form with her mouth an image of the beast. She was first given an apple peeling and her parents were greatly surprised on seeing that a perfect image of the elephant was formed with her teeth. Since that time she has learned to form with great rapidity letters, words, and sentences as perfect as print, and in this she takes great delight.—*Ex.*

NORTHERN ILLINOIS DENTAL SOCIETY—FIFTH ANNUAL MEETING—ELGIN, ILL., OCTOBER 21 AND 22.

The executive committee have the pleasure to announce that the programme is about complete, and that the outlook for a good meeting is excellent.

The scientific has not been lost sight of in our effort to furnish a practical programme. One feature of the sessions will be "Incidents of Office Practice." Some time will be devoted to the subject at each session, and the members and others who will attend are requested to bring along models of cases, or get into

presentable shape anything they may have to do or to say under this head, so that no time will be lost needlessly. Another feature will be an exhaustive consideration of crown and bridge work. A system of making this work will be presented to the society, and skilled workmen in this line will be on hand to discuss and illustrate.

Prof. McIntosh will give an illustrated paper on "Normal Histology," Dr. McCausey on "Malignant Tumors of the Mouth," illustrated.

The programme, which will soon follow this circular, will be attractive to the common sense and practical man. A sub-committee of Elgin men have charge of all the details for the convenience and entertainment of the convention, and they have promised and given your committee such cordial support, that success, so far as Elgin goes, is assured.

The committee urge members to bring their wives. Quite a number have signified their willingness to go. A movement is on foot to make this a feature, and while the convention is in session they are promised a good time. Keep your eye on the social feature.

The exhibits will be another feature. Your committee has promises in this line which will be of material interest to the progressive man. The programme of papers, lectures and clinics will soon follow this circular. All interested are invited to correspond with the chairman of the executive committee for information not contained above. Those who may be so kind as to volunteer papers or clinics, will please send such to the committee, that they may be announced.

Yours fraternally,

E. J. PERRY, *Chairman*,
1212 Tacoma Bldg., Chicago, Ill.
E. R. WARNER,
H. REID STALEY.

FILLING TEETH, by "Amber" in the *Chicago Herald*: When a dentist says to you that he can "save your teeth" tell him that you would rather die toothless than be ground to atoms; stabbed to the nerve centers, prodded with a buzz-saw and gagged with large sections of India-rubber sheets, merely to save a few bits of undesirable bone. The first thing the dentist did to me when he undertook to "save" my teeth was to tip me back in the chair and prop open my mouth with a stick. Then he lined my mouth with rubber and attached weights to that portion of the lining which hung outside. Then he put a bib under my chin and stood off a little way and gloated over to me. I tried to tell him what I thought of him, but was past articulate speech. "Pleasant afternoon," said he, taking up a battle-ax and stepping on a high stool where he could overlook the field of operation. After he had quarried a cavity, and blasted it out, he called an assistant and bade him turn a treadle. A big bumble bee immediately flew out of the revolving spokes and charged at the newly made cavity as though it was a flower cup full of honey. I saw stars, I heard a million slate pencils squeaking over a gritty surface, I felt cold hands toying with each particular vertebra of my spine, and a Waterbury watch seemed merrily winding in each ear. I tried again to speak, but my efforts were in vain. I would have given uncounted gold just to swallow. How little we appreciate our blessings until deprived of them! How undmindful of my opportunities had I been all through those vanished years when I could swallow or not swallow, as the mood overtook me. What countless

times I had performed that blessed act unwittingly, and now I would have sold my birthright (if I had one) for the power to repeat the blessed operation. It is generally just at this juncture when, between the pangs of delayed deglutition and the consciousness of feeble-minded drooling, the spark of reason bids fair to be extinguished forever, that the dentist begins to joke. What avails the majestic glance of a wrathful eye when the lower features are swathed in a damp sheet? My attempt at scornful protest was like the attempt of a teething babe to hurl the sevenfold curse of Rome. Alarmed perhaps at the pallor which I knew full well was creeping over my face, my tormentor finally removed the stick from between my teeth and gave me one more chance to swallow and, to appreciate to its full what the poet meant when he caroled the glad refrain, "Wipe off your chin!"

"You can come again Saturday," said the dentist as I reeled across the floor and donned my hat. "I shall never come again!" said I in hollow tones like a voice from the tomb. "You will loose your teeth if you don't," said he. "Yes" whispered I, leaning my tottered frame against the door post for support. "And what if I prefer to loose my teeth rather than loose my reason and my life? What I have suffered in your den, old man [he was a gray-headed villain of full sixty summers], has shattered my nerves for years to come. The horror I have endured with your buzz-saws and your battle-axes, your patent 7 x 9 drills and your circular-action battering rams has been more of a loss in mental strength and physical aplomb than to have laid down every tooth I have, in the dust. When you have patented a process by which dentistry is made not any more painful than guillotining I shall call again! until then, old man, adieu!" (N. B.—Pride will make any woman tell the worst sort of fibs. Notwithstanding my vow, I shall be on hand Saturday, and that dentist knows it.)

TARTAR AND SALIVA.

Dentists have discovered that tartar, a calcareous deposit on the teeth, is more abundant in persons of highly nervous temperament than in any others. The explanation, according to an observant dentist, is that persons of nervous temperament secrete more saliva than others, and as tartar is carried by saliva in solution, the deposit in the case of such persons is unusually large. It is a well-known fact that the nervous condition has a marked effect upon the salivary gland. An oriental method of detecting crime is to take several persons suspected of the offense and require them to chew dry wheat. The nervous fears of the guilty man seal up his salivary glands and he chokes in attempting to reduce the grain to a pulp.

NO MORE ARTIFICIAL TEETH.

Old age is robbed of half its terrors and much of its deformity by the brilliant discovery of a Moscow dentist, Dr. Znamensky, who, according to a possibly over-sanguine Russian contemporary, has delighted the civilized world by his skill in making teeth grow in toothless gums. After experimenting on dogs he tried the effect of his method in human beings, and the success was complete. The teeth are made of gutta-percha, porcelain, or metal, as may be desired. The root of the false tooth has some holes bored in it. Holes are now bored into the jaw, and into the hole the false tooth is stuck as is a nail in wood. In a short time a tender growth starts up the cavity of the false tooth, and this growth hardening the tooth becomes fixed in position. These new teeth can, according to the inventor, be

placed in the alveolus of a natural tooth, and thus when a diseased tooth is pulled out a metal or porcelain substitute can be inserted in its place without incurring any risk of transferring disease, as happened in Hunter's days, when the apparently sound teeth of poor persons when transplanted not infrequently conveyed disease. There are several minor inconsistencies in this statement, but it would be ungracious to look such a noble gift in the mouth, especially as according to dentists of good authority our race is destined eventually to become edentulous.—*Medical Press.*

NORTHWESTERN COLLEGE OF DENTAL SURGERY.

We have received the following letter from the Secretary of the Northwestern College of Dental Surgery which explains itself:

CHICAGO, Sept. 30, 1891.

TO THE EDITOR OF THE DENTAL REVIEW:

Dear Sir—In the September issue of the DENTAL REVIEW, page 708, you report the Northwestern College of Dental Surgery, Chicago, "(defunct)," and a star refers to a foot-note, reading, "*The diplomas of this college are discredited after 1889." This is an error which does this college great *injustice*, and has probably caused it *great financial loss*. You must have known that this college was recognized by the Illinois State Board of Dental Examiners at Bloomington last May, so it is *not* "discredited." Your REVIEW has an immense circulation amongst the profession, and has the power to inflict a great injury by such a misstatement, and I trust, as a slight atonement, you will give the report a conspicuous and emphatic denial in your October number. I send you by this mail a copy of the College Announcement for Session of 1891-1892, as additional proof that we are still *alive*, with a faculty any institution may well be proud of, either on the score of numbers or professional reputation.

Very respectfully,

J. A. MARSHALL,

Secretary Northwestern College of Dental Surgery.

IN MEMORIAM.

DR. W. H. ATKINSON.

In the providence of an All-Wise and Over-Ruling Father the subject of this tribute was removed from this to a higher life, at his home in New York, April 2d, 1891.

It is eminently proper that there should be placed upon the records of this association some evidence of the esteem and appreciation entertained by the members of this body for Dr. Atkinson.

He was one of the founders of this association, and none labored with a more persevering industry than he, for its permanent establishment and enduring welfare. He was always present at its meetings, and ever ready with a hearty willingness to fulfill any duty or perform any work assigned to him. He doubtless exercised a deeper and broader impress upon it than any other member. He was always the advocate of a broad and liberal policy, impatient with the low, narrow

and selfish. He possessed strong convictions, and was ever ready to avow and defend them; mere antagonism added strength to his forceful nature; notwithstanding this, he would yield with childlike simplicity to evidence and reason when properly presented.

He was not only interested here but in association work everywhere, and gave aid and co-operation in the organization and maintenance of dental societies throughout this country. He was enthusiastic in the formation of dental and scientific societies, throwing his whole energy, whenever opportunity offered, into such enterprises.

He was also greatly interested in the subject of dental education; ever ready to give wise counsel and aid, whenever it was in his power, and wherever needed.

By his enthusiasm he awakened interest and stimulated thought wherever he went; indeed, his presence was an inspiration. He exercised an almost unparalleled influence in the profession, and that, too, in the way of aiding and making better, professionally, those who came within its sphere. This he did at home, in his office, and abroad. He was the first to promulgate many new points in practice; he never hesitated to put forth anything that he thought would be of service to others; he communicated freely all he had. He possessed a wonderful faculty for communicating knowledge to others, as was shown in the fact that for years he had private classes that came to his office at stated times, and sat under his instruction, and such was his power in this work that he was able to communicate not only of his knowledge, but of his enthusiasm as well, to those who were his pupils. Everything he did and every resource he possessed were made subservient to his ambition for the advancement of dental science and art.

He had a broad, generous and sympathetic nature, with a heart large enough for the reception of all who had any just claim upon the regard and esteem of our common humanity. He was a firm and abiding friend; sympathetic, kind, and always ready to aid those in trouble.

And now in view of this great loss,

Resolved, That we will ever cherish, and will seek to perpetuate the memory of our departed brother, whose demise we so sadly mourn to-day; that we will not only cherish it ourselves, but will seek to bear it on to those who come after.

Resolved, That in all traits of this grand character, as above delineated, there is an example to which we can with profit conform; and especially may the younger, and the coming members of the profession be directed to this great exemplar.

Resolved, That this tribute of regard and affection be spread on a memorial page of the transactions of this body.

Resolved, That a copy, properly prepared, be sent to the family of the deceased.

Resolved, That a copy be sent to the dental journals of this and other countries for publication.

J. TAFT,
GEO. W. McELHANEY,
LOUIS JACK,
FRANK ABROTT,
EUGENE S. TALBOT.

—American Dental Association.

THE DENTAL REVIEW.

VOL. V.

CHICAGO, NOVEMBER 15, 1891.

No. 11.

ORIGINAL COMMUNICATIONS.

PRINCIPLES OF ART AND PRACTICE OF DENTISTRY—SECOND PAPER.

BY GARRETT NEWKIRK, M. D., CHICAGO, ILL.

In a paper read before the Chicago Dental Society in January last, and published in the DENTAL REVIEW of February, the subject was considered under the following heads :

- 1st. Definitions—general considerations.
- 2d. Truth. Art must represent truth.
- 3d. Beautiful because true.
- 4th. Beauty and utility.
- 5th. Harmony of relations.
- 6th. Simplicity of the highest art.
- 7th. Individuality.
- 8th. Rewards.
- 9th. Conditions of success.
- 10th. Unity of art.

Conclusion—six questions.

In my first paper I did not attempt the direct application of these principles to the practice of dentistry. How far I may go along the line of inquiry laid out in the foregoing list of queries and propositions before reaching the proper limit of time I cannot say.

Following their order we will first consider some thoughts on the application of the principle of

TRUTH,

And will introduce the subject with a clipping from the editorial notes of a weekly paper.

*Read before the Odontological Society of Chicago.

“Gerome, the greatest living painter, now that Meissonier is dead, gave one of his students a very severe lecture not long since, which may be of general information. In passing about among the students at their easels, he looked over the shoulder of one who was at work, and said to him: ‘You have great talents, but you will never have success. I am very sorry to find so much genius in a dishonest man. Your genius is wasted because you have no moral character.’ And proceeded to lecture the student in that vein for some moments. The great painter knew nothing of the student but what he saw of him in the picture before him—but a fellow student says that he described the young artist’s character as correctly as if he had known him intimately. It is something of a revelation to know that a rascal can never be an artist. Art is truth. A falsehood in a picture is as fatal to it as it is to the testimony of a witness. It means contradiction, discord and deformity. So in architecture—falsehood in the foundations, and the building will go to ruin—in the facade, and it is a monstrosity. There are mistakes and discords in every kind of human work, but one who is familiar with any given art will tell at a glance whether the artist made an honest mistake or purposely told a lie. If the latter, then he is constitutionally a liar, and can never be an artist.”

Among my early experiences as a practitioner in a country town was one which made a marked impression on my mind, and exerted I know not how great an influence on my work.

A lady called for an examination of her teeth and any necessary operations. I found them in excellent condition needing only the removal of slight accretions of tartar and one or two small fillings in fissures of posterior molars.

In making the examination my attention was particularly attracted to some gold compound fillings of approximal cavities in lower bicuspid and molars. I thought they were more artistic than any I had ever seen. The restoration of contour seemed to be perfect, and the gold completely adapted to the wall. Not a flaw or defect could be found at the cervical margins, and the whole surface had a beautiful finish.

I said to myself: “Here is the result of careful, conscientious work. The man who did it must have been not only capable but thoroughly honest.”

She said she had formerly lived in Chicago, and while there had been the patient of Dr. Noyes.

Now honesty wherever manifested is simply the purpose and intent to conform action to the lines of truth. There are but two essential conditions of success in any line of work:—first, the *intelligent perception* of; and second, the *purpose and determination to do* that which ought to be done. Failures result from faults in either direction. *Knowledge* in the individual is all unreliable where unsupported by a conviction of truth; and on the other hand an honest disposition may be powerless by lack of knowledge.

This double measure of value (which we might call the gold and silver standard) exists everywhere.

A lawyer told me not many days since of a statement he had seen to this effect: That no speaker however gifted, could become a really great orator unless he were an honest man. At first I hesitated to accept this as true; but almost immediately the thought came to me: "The great orator *must* be a man of deep and earnest convictions; and how can a man possess these without a keen conscience?" So I decided the saying was not far away from the truth.

In every department of dental work the principal of truth is fundamental and all pervading. It is the man who most clearly recognizes and most nearly obeys the truth who best succeeds. This applies not only to the work of his hands, but to character and conduct—to motive and to manner—and the great central truth is the one which Sir Henry Drummond has made the subject of a book and called "*The Greatest Thing in the World.*"

I submit in this relation that the professional man who is not essentially kind, humane, tender-hearted, unselfish, cannot illustrate the truth in any high degree, either by the influence of his personality or the work of his hands.

The belief we have in another's loyalty to truth is the basis of all our confidence. The confidence of his patient is to the dentist, as it is to the physician, a strong tower and a wall of defense. To merit that confidence is an aim worthy of the highest ambition.

Conversely, of course, a suspicion of untruthfulness begets distrust and a lack of confidence. Moreover, if the operator be not conscious of the truthfulness of his motive and of his work, he cannot have confidence in himself. How utterly demoralizing must be the effect of such a consciousness, on the life of the man and the product of his labor, who is compelled to live with it every day and sleep with it nights.

We may state the application of our principle in this form, viz :

It is the duty of the dentist, as an artist, first to study the truths of Nature. She is the mother of all our truths and he will err if he keeps not close by her side.

Having obtained knowledge of the truth he must then apply it faithfully, devotedly, unselfishly, daily and hourly.

BEAUTIFUL BECAUSE TRUE.

Under this head I wish to speak particularly of the curved line and contour filling of the teeth. No one will question, I think, that as a rule it gives the most beautiful effect possible to restore a broken tooth to its original form, and we should be able to demonstrate in this the principle above stated.

The great painter, Hogarth, has left us a simple souvenir of his genius in his "Line of ease and grace," representing a double curve made with the stroke of brush or pen.



"LINE OF EASE AND GRACE."

In the natural world, straight lines belong almost exclusively to the inorganic kingdom (if we make a possible exception in favor of the stems of trees and plants). Straight lines belong to stratification, which has taken place practically upon a plain surface, and to the planes and angles of crystalline bodies. They speak of slow deposition, crystallization, inaction, and fixed conditions in nature, or of pure mechanics in art. They never suggest life or movement. The "rolling stone" not only "gathers no moss," but loses its straight lines and angles. The curved lines of every boulder and pebble tell a story of fragmentation and action.

It has been said that there is not a straight line to be found in the body of a child. We may say quite as much for the adult.

If we examine carefully one of the long bones we shall find it difficult to discover anywhere straight lines of considerable length. There will always be found sufficient curvature to indicate life and action. Straight lines are endurable to the artistic sense only as they support, and are associated with curves. A preponderance of the straight lines and angles, as for example at the top of the Auditorium, while they may perhaps suggest massiveness

and stability, do not produce the most pleasing effect. On the square tower of that building the lines are similar to those of a fort or a block house.

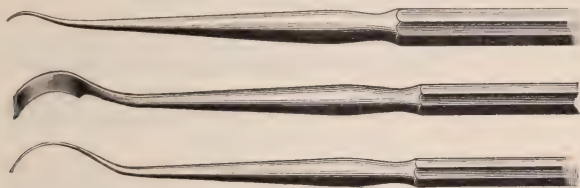
No curves, no beauty ; no beauty, untrue, is the rule in works of art.

We may say truly, I think, that there is nowhere to be found a series of forms which appeal more perfectly to the artistic sense than those of an ideal set of teeth. Collectively and individually they present only curved lines and principally convex surfaces. Apparent concavities are but depressions between the convex folds.

Mr. Lorado Taft, the sculptor, has called my attention to the fact that on the surface of the whole body there is scarcely a straight line or a true concavity, if we except the armpits.

A straight line upon a tooth, with or without an acute or right angle, tells only of attrition, erosion, loss, and encroaching age. The law of contour is that of the curved line and convex surface. It is inseparable from truthful restoration and restitution. It is the philosophical, consistent and artistic principle of operative dentistry.

It is well also to remember in this connection the form of the gum in proximity to the teeth. It presents everywhere a convex surface. Along the buccal and lingual borders this is evident to ordinary observation, but if we carefully remove the moisture from a normal approximal space, and examine with a good reflected light, the same form is equally apparent. There is in this an addi-



CUSHING'S SCALERS.

tional note to Dr. Black's eloquent plea for the preservation of approximal spaces.

Whenever our eyes are presented with a view of a space so preserved, by means of a contour filling, they may kindle with the thought, that in so far at least the work is that of an artist, and represents "*The beautiful truth.*"

I am fully convinced that the principle of the double curve—"The line of ease and grace," has not been applied as it should be to the forms of our instrument. There were never chisel scalers at our hand perfectly adapted to the work demanded—at least so far as I know—until they were placed before us by Dr. Cushing.

If you examine these carefully you will see that they are perfect illustrations of Hogarth's line.

I believe that a series of chisels differing little from the scalers except in the weight of the blades would possess excellent qualities of adaption.

Also in the line of excavators there is no doubt in my mind, that the double curve principle might be applied with great advantage, more definitely than has yet been done. The so-called "spoon" excavators owe their excellence to the curved lines of their shanks and edges and the convexity of their backs.

Straight line, sharp angle instruments are not in my opinion artistically or mechanically adapted to the removal of decay. Their only proper use, as it seems to me, consists in the preparation of cavities for filling, after the excavating proper has been accomplished.

The double curve principle has a value not fully appreciated, I think, as applied to gold pluggers.

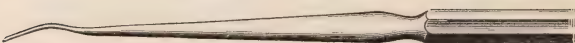
I have with me to-night a number of instruments made by myself with a distinct view of carrying out this idea, and it has been



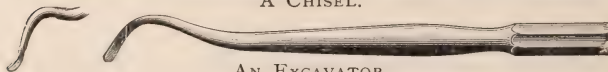
A HAND PRESSURE PLUGGER.



MALLET PLUGGERS.



A CHISEL.



AN EXCAVATOR.

my intention to attempt the production of some "sets." Some of those here presented have been in use for several years and I can make declaration as to their practical value. I wish to call your

attention particularly to this plugger which I have used for six years with hand pressure, in filling those undercuts in distal cavities which are not accessible to direct mallet force. I cannot imagine a form more completely adapted to the purpose.

There is one thing to be said of all instruments made after this plan; and there are some in the market which are approximately correct. Their forms are above criticism from an artistic point of view. The "line of ease and grace" cannot be otherwise than beautiful.

It occurs to me in this connection that Nature has most beautifully illustrated the idea by the use of this line in the building of the spinal column. It is perfect even to the shading of the dorso-lumbar region, as though it had been originally designed with a downward stroke of the pen.

BEAUTY AND UTILITY.

In my first paper occurs this paragraph: "The primary idea of art was to make a thing of use; and it has ever been the second immediate object of the maker of useful things to please that sense of beauty which is found to exist in some degree even among the lowest tribes of men."

So it has been and must be the primary idea in dentistry to make a thing of use. The natural teeth are treated and filled to preserve them for *use*. The root of a natural tooth is treated, its surroundings made healthy; it is filled and a crown placed upon it, for *use*. It was evidently the primary idea of the Creator himself in the constitution and arrangement of the teeth to make things of *use*. The more we study them in their relations to development, time, succession and offices, the more fully and beautifully does this truth become enlarged to our vision. Ask these questions:

Why the deciduous teeth?

Why their order of development and arrangement?

Why their special periods of existence and retention?

Why their special relations to their successors?

Why do bicuspid succeed molars?

Why are the succedaneous cuspids the last erupted of the twenty-four anterior teeth?

How many answers will be developed which shall involve the idea of *use*? At the same time there will follow with each question the closely related thought of beauty.

If this be true in nature it must be true in art. Art is but the pupil of nature. Art cannot find a truth or disclose a principle which has not been present in the thought of the creative mind.

It is often said in a general way, that art can but follow and may not improve on the work of nature. Here, I think, we may easily stumble. Let us question this matter closely.

Nature deals with things innumerable, and must do so in a wholesale way. For example, in one small field she produces some millions of grains of wheat. They are not uniformly nor all approximately perfect. Some are ideal grains, but many are undersized, shriveled and imperfect. The conditions of growth have not been everywhere equally present in that field. Some have lacked soil, some moisture, and others have suffered from overcrowding. If an artist were to set about making imitation grains of wheat, one by one, while he could not give them the principle of life, he would make them more nearly of an ideal form.

Is it not true, therefore, that the artist may improve in form upon a special product of nature.

Nature but seldom fulfills her best ideas in the structure and arrangement of a set of teeth. There is usually a failure somewhere to unite favorable conditions; consequently there are weak points of construction and faults of position. It may be within the province of the dental artist, therefore, to supplement and improve upon Nature's work in special cases. We may truthfully assert of a bicuspid or molar tooth, the weak points (fissures) of which have been reinforced with gold—"It is a better tooth than before. We have in this instance made an improvement on Nature's product." Usually we have not only added much to utility but also something to beauty.

In the restoration of decayed teeth, either by building or crowning, it is usually the case, I think, that high, artistic beauty and greatest usefulness may be combined, but to this rule there may be exceptions, growing out of peculiar conditions, where the dentist will be justified in sacrificing form to service.

This difficulty of harmonizing ideal form and use is greatest perhaps in the department of prosthetic dentistry. There are very few ideal edentulous mouths. The conditions under which we attempt a restoration of lost parts are absolutely unnatural. An ideal result, both as to use and beauty, is often unattainable by any art. The conditions under which the natural teeth had a certain

appropriate projection and were yet serviceable do not now obtain. Then each tooth had an independent insertion in an immovable process, now all must stand or fall with a movable plate. Muscles perhaps have been shortened, lines of antagonism changed and tissues absorbed or displaced.

What may we consider an artistic restoration? First, we may restore color and shade. In this matter Nature, I believe, never makes a mistake, if we except occasional accidents of pigmentary deposit in individual teeth.

Second, it may or may not be desirable to give the artificial teeth the various forms and positions of their predecessors. If yes, it may not be possible without sacrificing something of the *useful*. It cannot be declared inartistic to serve use in such a case even at the expense of beauty.

Third, in very many cases such restoration is not desirable. We find it possible to make improvements on the original arrangement of the teeth and their expression. In many cases complete restoration would be a restoration of faults which Nature with the best of intentions has not been able to prevent. Sometimes they are not really her faults, but the result of professional or non-professional blunders and mismanagement.

These cases present fine opportunities for the exercise of artistic taste and skill ; but the opportunities, alas, are seldom well seized.

In the one thing alone of the color and shade of teeth, it is quite exceptional when full dentures represent the truth.

This question would more properly come under the head of *harmony*, and may be reserved for consideration at a future time.

The artistic principle of harmony, as it relates to dentistry is well worthy of sufficient study to make it the subject of a special paper.

METHODS OF COMPUTING THE FACIAL ANGLE.

BY PORTER TRACY, ESQ., ANTHROPOLOGIST IN U. S. ARMY MEDICAL MUSEUM,
WASHINGTON, D. C.

(The following diagrams with the accompanying text of description contains in a nutshell the result of long investigation by many noted observers and is the first thing of the kind that has ever appeared in a dental publication. I have Mr. Tracy's permission to

give it to the profession; it is of especial interest at this time, in view of the prominent position the investigation of human jaws and crania now occupies.

These drawings were made for me by Mr. Tracy as an assistance to my work, the result of which appeared in the "DENTAL REVIEW" for April, 1890. (E. G. BETTY.)

ARMY MEDICAL MUSEUM,
WASHINGTON, D. C.,
Dec. 10th, 1889. }

DEAR DOCTOR:—Yours of the 28th ult. duly received. I have been too busy until now to write a sufficiently complete answer.

The note on facial angle which you enclose is of no value in itself as it is very vague. I enclose diagrams of the principal facial angles.

As to these facial angles in general, they do not give data of first-class importance, but serve at most to add to the interest of a complete list of measurements. The individual variation which they show is very great.

My diagrams have the names of the points carefully written upon them so, I take it, definitions are unnecessary. They represent:

Fig. 1. The angle of Camper plane—from center of auditory meatus to and beyond sub-nasal point. Facial line—from most prominent point of forehead to alveolar point. The lines cross and intersect at a variable imaginary point. I do not know how it was taken, but probably only upon a drawing. Out of use and unsuited to practical purposes.

Fig. 2. Angle of Cloquet. Plane; from center of auditory meatus to alveolar point. Facial line from glabella to alveolar point. The lines do not cross but merely meet at a fixed, actual point, the alveolar point. This angle may be and, I think, originally was taken from summit of teeth, but of course cannot then be exactly compared with that taken from alveolar point. It is a good angle when taken with proper accuracy. I have taken it with Spengel's Craniometer to my satisfaction, although the machine is made for other purposes.

Fig. 3. Angle of Jacquart. Plane—from centre of Auditory Meatus to sub-nasal point. Facial line; from glabella to sub-nasal point. The lines do not cross but merely meet at a fixed, actual point, the sub-nasal point. This angle has been much used and is, I believe, what is generally meant when one speaks of the "Angle

Fig. 1

FACIAL LINE

Most Prominent Point of Forehead

lines intersect at imaginary point

PLANE

Subnasal point

Alveolar Point

Angle of Camper

Glabella

Angle of Jacquart

(so-called Angle of Camper)

Subnasal Point

lines intersect at fixed point

FACIAL LINE

Fig. 2 -

FACIAL LINE

Glabella

lines intersect at fixed point

PLANE

Alveolar Point

Fig. 3 Angle of Cloquet

Centre of Auditory Meatus

Fig. 4 -

German Profile Angle.

Naso-frontal Suture lines intersect at imaginary point

PLANE

Alveolar Point

Upper border of Auditory Meatus

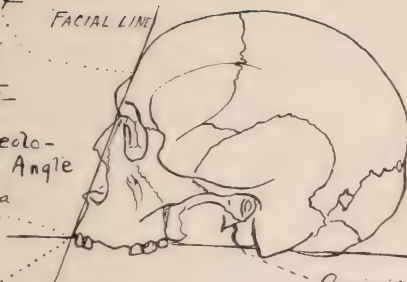
Lower border of Orbit

Ophryon, or point
just above
superciliary
prominence

Fig. 5-

Facio-Alveolo-
Condylean Angle
lines marked at
fixed point.

FACIAL LINE



PLANE

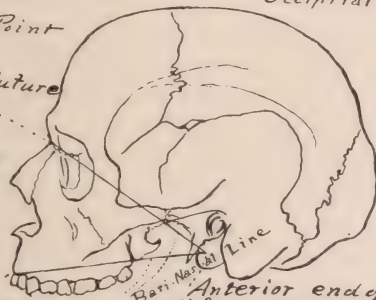
Occipital Condyle

Alveolar Point

Nasofrontal Suture

Fig. 6-

Method for the
Gnathic Index of
Flower



Alveolar Point

Basi-Alveolar Line

Anterior end of Foramen Magnus.

Basi-Cranial Axis

Nasofrontal Suture

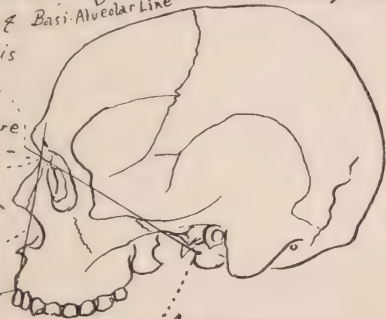
Fig. 7-

Craniofacial
Angle of Huxley

Facial Axis

Alveolar Point

Anterior end of Foramen
Magnum



of Camper." You see, however, that it differs from the true angle of Camper in the length of the facial line and in the place where the facial line crosses the plane. It does not include the sub-nasal prognathism which, we are told by Topinard, is by far the most important element in the profile of the face. Hence although it has been much used, it is not of any great merit. It may be estimated with a fair degree of accuracy by means of certain gonometers.

Fig. 4. German Profile-Angle. Plane; from the upper border of the auditory meatus to and beyond the lower border of the orbit. Facial line, from the middle of the naso-frontal suture to the alveolar point. The lines cross and intersect at a variable imaginary point. This is a good angle which I take with Spengel's Craniometer. But note the evolution from the original Camper's angle—that sought to express to the eye of the artist the general appearance in profile of the various races; this seeks to give to the anatomist a mathematical expression of the projection of the bones of the face from beneath those of the brain capsule.

Fig. 5. Alveolo-Condylean Facial Angle. Plane; from the most inferior point of the occipital condyles to the alveolar point. Facial line; from the Ophryon (or point just above the superciliary prominence, or, more exactly, the middle of a line drawn across the forehead from the root of one external angular process of the frontal bone to that of the other) to the alveolar point. Lines meet at a fixed, actual point, the alveolar point. This angle is the favorite in France, but is quite modern. An objection to it is, that nothing at all corresponding to it may be taken upon a living head, where, of course, the occipital condyles are inaccessible. The same remark applies to all the following:

ADDITIONAL METHODS.

Fig. 6. The gnathic index of Flower measure two lines. First from the anterior end of the foramen magnum in the median line (basion) to the alveolar point (basi-alveolar line, B. A.) Second from the basion to the middle of the naso-frontal suture (nasion), which is the basi-nasal line (B. N.) Reckon the following formula:

$$B. A. \times 100 \div B. N.,$$

This gives gnathic index, supposed to represent the prognathism. Its advantage is that it is handy in depending upon linear

measurements taken with the ordinary callipers and does not require the use of complicated and, as a rule, inaccurate goniometers. But, owing to the variable relation between the position of the occipital foramen and the facial bones, it sometimes gives results seeming to contradict the evidence of the senses when taking a preliminary side view of the skull. I constantly take this measurement.

Fig. 7. Cranio-facial angle of Huxley; angle between basi-cranial axis, or line from basion to nasion, and facial axis or line from nasion to alveolar point, used in comparative anatomy. This must be difficult to take but I do not know how it is taken, probably on a section of skull in sagittal plane. A point which is good, as far as it goes, is that the greater the numerical result of the measurement, the greater the prognathism; for example 110° is a greater prognathism than 85° by this angle. This is not true of any of the preceding, as inspection will show you.

Figs. 8 and 9. The French process of the double square, with skull set on alveolar-condylean plane on a proper apparatus, is used to study divers kinds of prognathism, the results of which may be expressed as indices or as angles. A reference to the drawings will show you that the large square forms a vertical line, graduated in millimeters, tangent to the alveolar point and by virtue of the position of the skull, vertical to the alveolo-condylean plane. From this, by means of the small square, also graduated in millimeters, we measure to the sub-nasal point reasion, and ophryon, noting the vertical height of each point (V.) on the large square, and its distance back on a horizontal (H.) line formed by the edge of the small square. We then reckon an index for each point thus : $H. \times 100 \div V.$

As we thus know the length of the two sides of what, as you see, is virtually a triangle we can mathematically calculate the angle, or we may plot the two sides on paper and measure the angle of the hypotenuse by means of a protractor. This is the means by which to study the very important sub-nasal prognathism. I use it constantly.

Fig. 10. Last and lamentably least is the method which was used to calculate the facial angles given in the old published catalogue of the crania in this museum. I do not know of its having ever been used at any other time or place. It is probably a mistaken imitation of the Angle of Jacquart (*Fig. 3*). Inspection shows you

PROCESS OF THE DOUBLE SQUARE 1112-

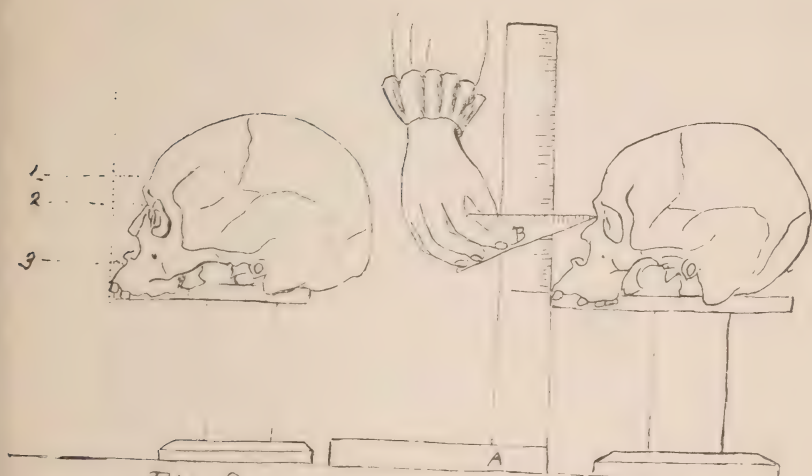
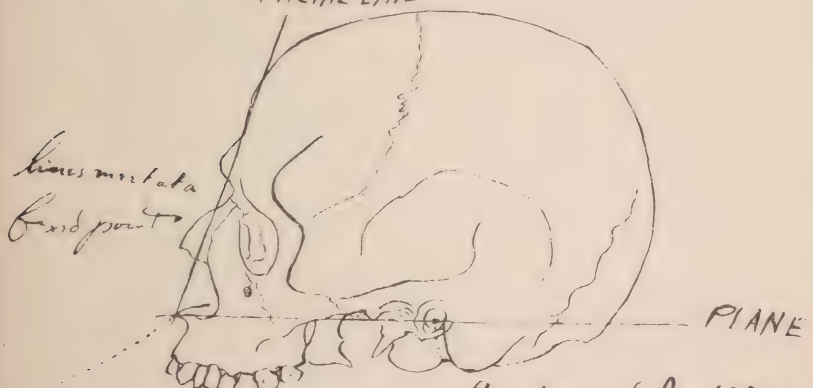


Fig. 8-
Skull in position showing various
lines to be measured.

Fig. 9
The squares in use to
measure line "2" &c

Ophryon, or point
just above superciliary
prominence

FACIAL LINE



Anterior Nasal Spine

Centre of Auditory
Meatus

Old Method of the

Army Medical Museum

the difference. It cannot be of much value, owing to the variability of the nasal spine, its liability to fracture, and the difficulty of fitting a goniometer upon it.

As to the prognathism of the lower jaw, it was taken by the maxillary angle of Camper. His facial line was prolonged to the summit of the upper incisors and there intersected a line drawn to the same point from the mental eminence. The angle between the two was measured. Similar processes are, I think, allowable for any of the other facial angles, the alteration being, of course, noted; but, as a matter of fact, skulls provided with good incisors and lower jaws are so comparatively rare that the subject has not been much studied.

I hope to see your paper soon and shall always be ready to give you any information in my power.

Yours very truly,

PORTER TRACY.

WHAT THE DEGREE OF D. D. S. SHOULD REPRESENT.*

BY C. E. BENTLEY, D. D. S., CHICAGO.

The subject of Dental Education is the paramount subject of dentistry to-day.

No society, national, state or local, convenes but what some time and thought are devoted to this important topic. The dental journals have thoroughly discussed the theme, and legislators have contributed their mite.

It would seem, therefore, that what the writer had to say would be of a nature superfluous, were it not for the opinions he holds concerning what should constitute a dental education, and for the hope that discussion might be stimulated so that the flame of agitation may be fanned anew.

The agitation that is upon us to-day is the fruition of seeds of thought implanted in the hot-bed of truth away back in the thirties. Brown, Hayden, Tucker, Keep, Harris and a number of other illustrious men, whose influence was mighty during that formative period of dentistry, are responsible for that which crystallized into a movement headed by Chapin A. Harris, who, in 1840, stood before the medical board of the Baltimore Medical College and pleaded for the establishment of a dental department in that school.

* Read before the Northern Illinois Dental Society, October, 1891.

He represented a broad and comprehensive principle, unfettered with any mercenary raiment, or subtly-laid plans for personal gain; actuated only by an unselfish desire to promote the betterment of his profession by a systematic training in the fundamental principles that govern the healing art.

This truth, thus set in motion, made but slow progress until after the recent civil war, when men whose fortunes had been depleted and whose vocations had flown with their fortunes, in casting about for some occupation, selected dentistry, which would yield a fair return for a small investment.

The mental acumen of this class of men as compared to the class that were practicing dentistry at that time, was superior, and had a salutary effect upon the profession. These men brought their trained and practical minds to the profession, and as a class, were among the first to realize the need of a broader culture.

The story from this period to the present is one of natural evolution from the simple to the complete.

During this evolution the colleges have played a most important part. Their influence has been both salutary and questionable. It is an open question to-day whether the dental college which Harris and his colleagues inaugurated was beneficial or detrimental to the progress of dentistry to an honorable place among the learned professions, and yet who can compute the value of the dental college as an agent which has placed dentistry where it is to-day.

A great number of our colleges have not represented the progressive side of dentistry. They were the creatures of a demand, not for better, but for more dentists. Dental colleges have turned out upon the public a number of gentlemen who have the authority to append the degree of D. D. S. to their names. Just what the title represents has been variously estimated. One gentleman has often stated that it represents a "Kindergarten training in medicine." Others, that it had simply supplemented the office.

The phenomenal success of some of our colleges together with the laxity of our State laws have stimulated the multiplication of these colleges with such rapidity that evils of gigantic proportions have crept into the systems of education, which have attracted the attention of all earnest men in the profession.

Two important factors have worked almost irreparable injury in the equation, since the creators of dental colleges began their

work, namely: The desire to obtain a diploma in the shortest time possible, and the intense rivalry between different colleges. Nor can we see from the outlook upon the dental horizon any remedy for this most aggravating evil. This element of rivalry as to numbers subordinates the principles of an institution to the material gains, bringing dishonor to the school and debasing the object of true education. This also works further mischief. It admits to studentship, men who are totally unfit to pursue a scientific course—men whose earlier education has been neglected, and who are consequently unable to grasp scientific deductions in their fullest sense.

Many worthy men are doubtless led to the belief that dentistry is purely a mechanical art, and boldly elect the profession as a calling for the only reason that they possess some skill in that direction.

But unless the eyes of such men are opened to the full significance of the underlying principles that govern all disease they become routinists—mere machines. Unless he realizes the significance of destructive and constructive metamorphosis, physiological and pathological differences, the relation of the general to the special; unless he be grounded in the principles of medicine his professional life is a failure and mortification his reward.

Mechanical skill, and artistic taste, however desirable and necessary, cannot be accepted as a demonstration of a dentist's qualification.

This is the age of specialism. The men who have made medicine, and are making dentistry dignified professions, are men who have followed and are following certain subjects to their termini with an intelligent observance of all collateral matter that directly and indirectly have bearing upon the subjects at hand. In the writer's opinion, the days of the general practitioner of medicine are numbered. It is the tendency of present civilization to be suspicious of the man who professes to "know it all."

Intelligent specialism can be based only on a broad and thorough general education. The basal principles of the institutes of medicine can be understood only by a profound study of the laws of life.

As some one says: "If dentistry is to be acknowledged as a specialty worthy of rank with other recognized specialties of the healing art, it must show a breadth of culture in its chosen field equal to that demanded of other specialties in theirs." It is not my

purpose to raise the question whether dentistry is a specialty of medicine, or an independent profession. We are widely divided upon that question, and each side has merit worthy of consideration. The public, however, claim from us the best service for the amelioration of pain and deliverance from the diseases that fall within our domain.

If we are mechanics simply they do not get what they demand. If we be true professional men, imbued with the scientific spirit that permeates the age, absorbing and assimilating the broad and governing principles that control medicine, together with an essential skill and manipulative dexterity, we round out the definition of what a true dentist should be. Now the question that will concern this body and is the burden of this paper is, can dentistry, as regards the relation of the general to the special, be best taught in a dental or a medical school?

This question admits of but one answer, namely, dental schools. But do our dental schools supply the necessary curriculum to fully insure the affirmative answer to this question? We have assumed in this paper, that to be a specialist worthy of the name, one must be grounded in the institutes of medicine.

Yet on the one hand we hear that our training in dental schools is mere "Kindergarten medicine," and on the other we see dental graduates flocking to medical schools to round out their requirements to become full dentists. With all other specialties known to medicine, the broad foundation is first laid and the superstructure—that is the specialty—is afterward built. In fact, a college for the education of specialists is not the place in which elementary instruction in general principles is given; but the teaching of the application of the general to the special is the paramount object. Those of us who claim that dentistry is a specialty of medicine must admit that in this we are working inversely. In recording this thought I am cognizant of the fullest significance of what might be said in opposition; but in return would ask, are the teachings of the fundamentals in our dental colleges, Kindergarten medicine?

The question that is of supreme interest to the writer is, why not round out the curriculum and requirements of the dental college, so as to complete the education of the most ambitious dental student?

Many of these gentlemen claim that from the additional advan-

tage gained from their attendance upon medical lectures they are enabled to give better service to their patients and satisfaction to themselves; some going so far as to say that the day is not far distant when all dentists of the future must first become M. D.'s before they will be legally qualified to practice. If such advantages are to be obtained upon the attendance of a medical course, why not add to the dental curriculum that which is of theoretical, and practical value which is obtained at the medical college, and give the D. D. S. the credit for the same? If we have to go to a medical college for bacteriology, why not have bacteriology in our dental schools? If we receive superior instructions concerning surgery, or reflex phenomena, in medical schools, why not strengthen our chairs in those departments? In a word, why not give all in our dental schools that is needful without necessitating a course of study elsewhere?

Dental schools have come to stay, and if students, to become full dentists, are obliged to seek other sources to round out their knowledge, it becomes the duty of those in power to make the dental schools commensurate with the requirements. The degree D. D. S. should represent all that is of theoretical and practical value that is contained in the degree of M. D. and D. D. S.

Dr. Garretson, in a private letter to the chairman of the section on oral and dental surgery of the American Medical Association, published in the *Journal of the Association* at Chicago, says: "The following distinction is made between the course conferring the D. D. S. degree, and the one conferring the M. D. degree, or both. In the Philadelphia Dental College on matriculation, the student signifies his intention to take the M. D. or dental degree or both. If he chooses the course conferring the dental degree, he is taught only such branches as pertain to the treatment and filling of teeth. On the other hand, if he signifies his intention to take the M. D. degree or both, he receives instructions in the branches that will fit him to practice oral surgery or oristry, and medicine as well as dental surgery."

It is at this point that the writer would part company with so eminent an authority as Dr. Garretson. A curriculum that offers in its breadth, only the provisions for the "Treatment and filling of teeth" is not a curriculum the present dental student demands. It is not a curriculum in accord with the aggressive spirit of the profession, but *is* one whose bias is toward the mechanical rather than

the scientific. Compare, if you please, the Dr.'s statement, with the one made by the late Dr. Jas. W. White, who said "Dental colleges should hereafter graduate no man who is not able to diagnose intelligently any tumor or lesion of the mouth, whether he elect to operate or not, and who is not capable of treating properly any case of fracture of the jaw, or who cannot give a sound opinion and judicious advice with regard to any lesion of the oral cavity or any lesion dependent upon direct or sympathetic relation with the mouth or teeth. From the diseases incident to the first dentition, to the direct and associated difficulties of the edentulous mouth of old age, he should be an expert in diagnosis and in correction of the disturbances and discomforts connected with any abnormal condition of the oral cavity."

As to which of these standards this body will prefer, the writer has little doubt. But do our dental colleges so complete our student's education, to fulfill Dr. White's standard of requirement, and if not, why not?

Time is to decide the question as to whether we are a specialty of medicine or an independent profession. That should not give us as much concern as the rounding out of the definition D. D. S. So when it is arrayed before Time's tribunal it will be given its place by virtue of its merit rather than its claims. The most potent factor in this result will be our systems of education. The advanced interests of the profession are continually making demands upon our colleges and they are gradually acceding to these demands. Not the least of importance will be the character of those admitted to the profession. We believe that the average student who is to take a place in any learned profession should at least be required to prepare himself as well as he should to enter the high school; but as a noted dental educator says, "Such will not be the case so long as the qualifications of the pupil, both for entrance and exit are controlled by that circular god with the eagle stamped on the reverse side."

The inference of such a sentiment is too plain for further comment. The duty of every earnest man in the profession is to change either by legislation or the creation of moral sentiment, the environments of our colleges that such a charge may be made impossible. In the writer's opinion a uniform standard of our college requirements, with positive measures to secure its enforcement would materially lessen the intense rivalry and above all rectify the

abuse of securing students through the medium of easy matriculation. If a college be culpable for admitting an unqualified person to studentship, what shall we say of the college which graduates such persons? Criminality rushes to our lips, but to say the least, it is wanton recklessness—a recklessness at the expense of the profession's honor and good name—a recklessness, the extent of which, the profession, sooner or later, pays for with interest.

If we are to judge of the behavior of a goodly number of our graduates, much profitable time might be spent in teaching them their moral obligations to their fellow-practitioners, and to their profession.

Ethics may be used in a more or less comprehensive sense. With all professions it should be construed in its fullest sense. It should take in a man's moral duty, not only to those individuals with whom he may come in contact, but also to the body politic, and above all to his profession and its followers.

So many infractions of the ethical laws that should govern any body of professional gentlemen, come to our notice in these latter days that the moral tone of dentistry appears to be falling lower and lower. A D. D. S. degree should, with other things, represent that its possessor, by virtue of its holding, is a moral obligant to the ethics that subserve to the best interests of his profession. No better time exists for the impression of this grand principle than during his college days. This should be taught by precept and demonstrated by action.

A highly colored lecture on "Ethics" upon the one hand, and a glowing advertisement—"only a slight cost for material" upon the other, will not do much to convert the wary student to the principles that make a profession grand in all of its proportions.

Gentlemen, this is a most serious question. The seeds of quackery and charlatanism are often sown in the college room. A graduate's estimate of the value of the ethical relation to his profession and professional colleagues is only proportional to the true reputability and true ethical standards he absorbs from his Alma Mater. His Alma Mater should be therefore, in theory and in practice, governed by so high a standard, that in following her footsteps, her children would have small need of a code of ethics.

Be assured, however, that we have much faith for the future. Dentistry of the past has been dragged from the quagmire of simple mechanics, by its earnest devotees, and is to-day knocking at the

door of the learned professions for admission. We have as much faith for the future as we have respect for the past. More and better dentistry is being done to-day than ever before in the history of civilization. There is a keener interest manifested in the advancement of the profession; better men are engaged, and are being engaged in tutoring the students. We have faith in those who have the power to adjust the abuses that deter the onward march of dentistry. Therefore, we trust you will not think the picture overdrawn. The brilliant background is but accentuated by the shadows, which cannot successfully conceal the rising glory of the sun. And in the brilliant noonday we will look back, appreciating the fact that the "spots upon the sun" only proved an incentive for higher knowledge, sweeter labor—because more intelligent labor—and results made splendid by the co-operation of professional brothers and friends working together in harmony for the betterment and still higher advancement of their chosen calling.

INTERDENTAL SPACES.*

BY GEO. J. DENNIS, M. D., D. D. S., CHICAGO, ILL.

The introduction of cohesive gold in 1859, and the application of the mallet the year following, by Dr. Wm. H. Atkinson, marked the beginning of a new era in dentistry. Soon after this, the idea of restoring teeth to their natural forms by the use of gold, was advanced, and since the publication of the first consecutive monograph on the subject by Dr. Wm. H. Dwinelle, the dental world has been in a turmoil through the contentions of various factions with reference to the advantages or disadvantages of the reproduction of natural tooth forms previously destroyed by decay. The earliest discussions on the subject were held during the meetings of "The Society of Dental Surgeons of the City of New York" in 1866, following the paper by Dr. J. S. Latimer on "Contour and Flat Fillings." A notable statement was offered, that "A contour gold filling was cheaper at ten dollars than a flat one at two dollars."

Numerous and various have been the arguments for and against contour operations since that time; but an examination of all the literature on the subject reveals the fact that until very recently

*Read before the Chicago Dental Society.

the spaces between the teeth have received very little attention, and only incidental mention. The importance of the spaces themselves, their relation to the surrounding tissues, and their influence on the health of the individual, seemed to have been almost overlooked.

Dr. Black's paper, "The Interproximate Spaces," published in the July number of *THE DENTAL REVIEW* of last year, is the first article devoted entirely to the consideration of this subject. He also remarks in his paper the scarcity of any literature pertaining to these spaces. His treatment of the subject is exhaustive, and your forbearance is requested if he is quoted extensively.

The inter-dental space has been described as V-shaped or triangular in form, the triangle bounded by the approximating walls of the adjacent teeth and the alveolar border lying between them. It appears to me that it could better and more definitely be described as pyramidal in form, the base of the pyramid represented by the lines of the lingual and buccal alveolar borders, and the lines of demarkation between the crowns and roots of the adjoining teeth; two sides of the pyramid formed by the mesial and distal surfaces of these teeth, while the other two sides are formed by imaginary curved surfaces of triangular shape, whose base lines are the alveolar borders of the lingual and buccal sides of the space, whose lateral boundaries are defined by the intersection of the walls of the opposing teeth, and whose mutual apex is the point of contact of these teeth. An interdental space would then be represented by a figure something on this order.



The sides of this pyramid will present surfaces more or less curved, of which the mesial surface will form a longer curve than the distal; the distal, a sharper one. The curvature of the buccal and lingual sides will be about equal, and the basal mesial angles will, as a rule, be greater than the basal distal angles, in both the lingual and buccal sides of the pyramid.

The size of this space varies according to the size and conformation of the teeth between which it is found. The base at its minimum width mesio-distally—according to Dr. Black—is usually

from ten to fifteen hundredths of an inch. The entire length of the dental arch, measured through the points of contact of the approximating teeth, is five inches ; while the sum of the measurements of the same teeth through their necks is only three and one-half inches, which gives to the interdental spaces one and one-half inches of the length of the dental arch. The same writer notes that the spaces between the incisors, mesio-distally, is smaller than between the molars. This statement is also true of the linguobuccal measurements, in which the variation is from thirteen to thirty hundredths of an inch in width, while it is inversely true of the measurements of the heights of the spaces, which very nearly correspond to the mesio-distal measurements of Dr. Black.

In the living subject, this space is nearly filled with an elastic cushion of gingival tissue, which is freely movable toward the apex of the pyramid, but is firmly attached at its base to the alveolar process. This interdental tissue arches from the lingual to the buccal alveolar border of the space, and to a much smaller degree mesio-distally, due to its compression between the approximal walls of the teeth. Its height varies with the height of the space, from six to twelve hundredths of an inch. Between the alveolar border, near the attachment of this tissue, is a peculiar organ described by Dr. Black in the "American System of Dentistry," whose function, he says, is undetermined ; yet he finds at this point a fluid which slightly retards the process of fermentation, and seems to owe its origin to this particular organ. The surface of this cushion is smooth, moistened and highly lubricated by saliva and mucus.

In this manner, nature has adapted the various tissues to each other for the perfect performance of mastication—has provided an extensive cutting and grinding surface, which is sufficiently broken to afford elasticity, permitting a certain amount of movement, which is yet firmly held in position, and to which is connected a simple but perfect cleansing and feeding mechanism, consisting of the gingival cushion and the elastic and muscular tissues of the tongue and cheek.

The relative arrangement of these parts to each other is always maintained in health. Disease of any of these parts, or an accidental or artificial destruction of any tissue necessary to the performance of the function of such a mechanism, must necessarily impair its usefulness. As a matter of fact, each

tissue employed in the masticatory apparatus is affected more or less by accidental or artificial means, and seriously by disease. Not least among the influences that govern the usefulness of this mechanism, and consequently the health of the individual, are affections of the gingival cushions. These may be entirely obliterated either by a primary caries of the teeth, or as previously stated, by accidental or artificial cuttings on the teeth, which obliterates the interdental space and its interposed cushion. When obliteration of the space does occur, this cushion is absorbed in part and takes on a concave form instead of the arched form noted in health. Small processes of the gingival tissue will extend upward or downward, as the case may be, on either side of the remains of the space, in a vain attempt to continue their usefulness. Those processes, unsupported by the arched form, lose their elasticity, become enlarged and congested, and instead of serving to force the masticated food between the grinding surfaces again, retains it between their free edges and the teeth. The result is a still greater congestion of the gingivæ, ending in inflammation in the peridental membrane, pain interfering with the action, the development, of micro-organisms, fermentative changes with attendant chemical processes, and more extensive caries of the teeth.

An argument frequently advanced on behalf of contour fillings is, that nature has given us certain tooth forms which we should seek to imitate, if we wish to be truly artistic in our work, and that these tooth forms were constructed on principles which would give them the greatest resisting power against destructive influences.

That the teeth do resist destructive forces in the mouth remarkably well, no one can doubt; but nature never provides in advance for accidents or pathological changes. She only provides for the ordinary performance of biological function:

In this case, the peculiar formation of the teeth was not intended to resist extraneous forces, but that the entire mechanism, teeth, jaws, gums, lips and cheeks should be so correlated that the function of mastication should be carried on in the most perfect manner. Decay of the teeth is a reversion to original forms. It has no place in the order of a higher evolution. Nature in her economy makes no provision for such adventitious influences until they are actually at work. In the operations performed for the restoration of tooth forms, the benefits do not exist in the teeth

themselves, but in the preserved relation of the teeth to the contiguous parts, which bring into operation every tissue employed in the masticatory apparatus, maintaining the health of every part and consequently assisting the resistance of caries by the teeth.

The clinical features involved are recognized at once by all; but even with this recognition there seems to exist a common disregard for them.

Dr. Black, in the paper mentioned, cites a case which he describes as follows:

"The man is about fifty years old. He had fairly good teeth, but a large number of proximal decays occurred. He has been careful of his teeth apparently, to the best of his ability, and of course began having fillings made under the old rule of soft gold, and separations with the file to give space for operating. This went on until most of the proximate surfaces had been filled; not only filled once, but very many of them re-filled a number of times, and each time the file was used to give more space. This plan was continued up to the time when he first came under my care, only a few months ago. The mechanical execution of the fillings has been fairly good. He has lost no teeth. But the greater number of interproximate spaces are completely obliterated. That is to say, the necks of the adjoining teeth are in contact all around the arch, except the anterior lower teeth and two or three spaces in the back part of the jaw. Each time a separation has been made for room to work the space has gradually closed. In this slow process of closure of spaces the molar teeth have imperceptibly moved forward, gradually shortening the length of the arch. The upper arch now measures a little less than four inches from posterior to posterior of the third molars, and judging from appearances the arch must have measured five inches, or was of average size originally. The contraction is sufficient to materially modify the expression of the countenance, and as the gentleman is rather thin in flesh, gives the features an unnaturally pinched expression.

In this movement the interproximate gingivæ have been destroyed, in some cases so completely that there is no soft tissue between the proximate surfaces further crown-wise than the gingival line, and even on the neck portion of the roots must be but a mere trace of the peridental membrane reaching across from one root to the other without a bony septum. This slight and much crowded tissue is kept in a state of irritation by the wedging of

the food against it, rendering mastication very difficult and painful.”

Within the last few years my own attention has been attracted by the neglect of these spaces and the tissues found in their immediate vicinity. Where extensive caries had caused almost entire destruction of the approximal surfaces, the fillings inserted, in many instances, were either flat or beveled toward the grinding surfaces until the necks of the adjoining teeth lay in close apposition. In as many more instances the wanton destruction of tooth substances on approximal surfaces had been observed where there were only small cavities containing small fillings. This destruction must have been done for no other purpose than that of obtaining access to these cavities, or that of finishing the fillings after their insertion. The result was, of course, obliteration of the interdental spaces, with the attending consequences. When so much is written with regard to the restoration of tooth forms, would it not be wise to attempt the preservation of tooth forms from the file and disc before they are destroyed by decay, as well as afterward? Almost as much destruction of tooth form from this cause alone may be found to-day in the mouths of those who visit dentists as may be found the result of decay. The unsightliness of the mouths of his patients should seemingly deter any operator from such a practice, when apparatus can be so easily obtained to suit any case, while the diminished usefulness of the denture, and the suffering attending every act of mastication, should be a still stronger argument against the practice.

In a fairly large number of cases that have come under my observation, more or less obliteration of the interdental spaces has been noticed, due to the causes mentioned. Many of the cases have been exceedingly annoying, owing to the inflammation of the gingivæ and the periodontal membranes in the vicinity of the obliterated spaces. When a restoration of the spaces to their natural forms has been successfully accomplished, the gingival septa have returned to their normal condition, the function of the parts has been restored, and the patients relieved of pain.

One case interested me greatly because of the number of spaces destroyed. The operation for the restoration of the obliterated spaces was begun some time previous to the appearance of Dr. Black's paper, and was completed some time afterward. The patient was a gentleman about thirty years old, strong and well in every way. His teeth were of more than average density, large and

well formed. They could be well classed with the variety known as bell-crowned. The denture above and below was complete. The eight anterior teeth above were found to contain extensive cavities of decay on both mesial and distal surfaces, the first bicuspid excepted, their mesial surfaces alone being affected. Eight of these cavities had been filled with gold about five years before. The gold at the time of my examination shone out in a frame of blue and black. When the teeth were first filled the cavities were not extensive, but the file and disc had been used until the four incisors resembled pegs rather than teeth. Seven of the interdental spaces were wanting; the adjacent teeth lay in close apposition at their necks, and the gingival margins were inflamed and painful. Between three of the teeth pus was found. Over the left lateral incisor a chronic fistula existed. Tests were made for gangrenous pulps, and four were discovered. Later exposure of the pulp in the right bicuspid made devitalization necessary. In the treatment, the pulp canals of each of the dead teeth were made thoroughly aseptic, and filled. The fistulous tract healed nicely.

On the 25th of February, 1890, the work of restoring the interdental spaces was commenced. A separation was made between the cuspid and bicuspid of the left side, by means of cotton, tape and rubber, with as little pain as possible. The approximating cavities were filled, with a view to restoration of the space between the teeth. A rest of three or four weeks was permitted. The bicuspid and cuspid of the opposite side were then separated, the approximal cavities filled, and another rest given. This process was repeated with the remaining spaces, restoring them alternately on the two sides of the mouth, until all the spaces had been returned as nearly as possible to their normal condition. The operation was completed October 21st, 1890, after a period of about eight months. At this time the space between each tooth and its neighbor at the neck was about one-tenth of an inch. In the aggregate seven-tenths of an inch had been gained between the cusps of the first bicuspid of the two sides, measured around the arch. The process was carried on so slowly that the gain in the length of the maxillae was not noticeable. The benefit derived, consisted, outside of the filling of the teeth, in the reduction of the inflammation of the interdental gingivae, the absence of pain, and the improved appearance of the mouth, notwithstanding the large amount of gold in sight.

Observation will show that fillings which might have been use-

ful in retaining this space and in restoring tooth forms, have been cut away in finishing because of the use of the disc, where fine files, chisels and strips would have made a perfect and useful filling, preserved the interdental spaces, and the decidedly useful cushion of gingival tissue which fills them.

DEVITALIZING AND REMOVING PULPS.*

BY H. H. SILLIMAN, M. D., D. D. S., CHENOA, ILL.

I have no apology to offer in presenting to you a paper on the subject announced.

The subject was chosen for me by your committee.

I shall probably not have the pleasure of presenting to you anything that is new, but rather recall, for your consideration and discussion, the thoughts that have been given by some of our most able writers.

I believe as scientific men we have no right to follow any one line or method of practice without a good reason for it.

Habit is not a good logical reason.

I shall endeavor to give my reason for each step in the operation as I follow it.

I shall think that we have profited by the paper if each one, as I give these reasons will think, "Is that logical?"

If you do not follow the same practice, when it comes time to discuss the paper, say so, and tell us why.

Either our way is wrong and yours right or *vice versa*; and the day is come when we as scientific, intelligent practitioners of a liberal profession should settle on some one method of practice and for a *reason*, a *good reason*, not because it is a habit.

If you can give a better reason for your method than I can for this one, I want to hear it because I want to learn the best way.

Now, gentlemen, get out those pencils and make a note of each point with which you do not agree, so that you will not forget it at the time you rise to discuss the question. Let us have a discussion that will benefit us if the paper does not.

In speaking of the devitalization and removal of the dental pulp, the first question which naturally arises is, when shall we devitalize?

*Read before the First District Dental Society of Illinois.

In regard to this matter, there has been a great difference of opinion among our best practitioners. Some of you will remember when nearly every pulp which showed any probability of living was capped.

That was one extreme and the result was many abscesses.

As a natural consequence the great majority of the profession quit the practice of capping almost entirely as they had previously practiced it.

That was the other extreme.

But there were some who practiced and taught that we should find a happy medium between these two extremes and therein find safety.

The question still is, where is that happy medium? To which question we would get many answers.

The reason for this great diversity of opinion to-day was well given by Prof. Pruyn at the last meeting of our State society, when he said "Specialism is very apt to dwarf our mental vision, so that the specialist is often accused of seeing only just that particular part of the body which he is called upon to treat and nothing else, thus wholly losing sight of the complex relations of things and how one diseased member of the body may seriously impair the usefulness of another member."

This I deem to be one of the greatest causes for so much difference in the practice of the different members of our profession in regard to this subject.

Far too many of us are in the habit of looking at the one tooth upon which we are about to operate and deciding from that alone what shall be our course of procedure, entirely heedless of the fact that there are certain conditions of the general system which demand some of our attention before we can properly decide what to do.

Let us say then that there are two general classes of conditions which must be taken into consideration in regard to the treatment of the dental pulp.

First. The local condition.

Second. The general condition.

Prof. Harlan said in a paper read before the Union Dental meeting at Boston in October, 1890:

"The destruction of the pulp in a permanent tooth is a foregone conclusion, after a loss of a portion of its substance, by

exposure, or it has long been irritated or inflamed and congested from near or total exposure to external agencies."

To this general statement he made a few minor exceptions.

As to the general condition of the patient, Prof. Pruyne, in the same paper from which I quoted before, stated my views in this respect exactly when he said, "Even though the condition of the part should appear to be in a fairly healthy condition, with only a very slight exposure and a small amount of irritation, inflammation and congestion; if the patient were thirty-five or over, and anæmic, or plethoric, rheumatic or neurotic, or the recuperative processes in any wise below par, I would say devitalize that pulp."

There have been many ways that this may be done brought to the notice of the profession, but only one that has been generally accepted. That is the use of arsenious oxide.

It is generally admitted that arsenic should not be used while the pulp is inflamed, because it will increase the congestion, and thus prevent the absorption of the arsenic.

The latter fact is readily explained by applying the well-known law, that pressure of fluids on one side of an animal membrane tends to prevent the passage of fluids or substances in solution upon the other side.

The inflammation, if there be any, must be allayed then before the arsenical application is made.

This can most readily be done by first puncturing the pulp with a sharp instrument to allow the escape of a drop of blood, thus relieving the congestion to a certain extent.

Then applying an anodyne which should be sealed in the cavity for two or three days.

I am in the habit of using for this purpose a paste made of iodoform and oil of cassia, both of which have anodyne properties. The cassia deodorizes the iodoform fairly well. This can be better done however by rubbing up about four drops of the oil of citronella with a dram of the iodoform before adding the oil of cassia.

Those of you who read *THE DENTAL REVIEW* for August, 1891, probably noticed the editorial on the paper entitled "Monogram on the Dental Pulp." In reading that article, I noticed that there was a great difference in regard to the base used for arsenical preparations.

Some make their arsenical paste with carbolic acid, some with creosote, some vaseline, some lanolin, and some an essential oil.

You may look the literature over and you will find no settled idea as to the proper base. In fact it has been stated that it makes no particular difference what the base is. It is the arsenic that does the work. I believe this to be wrong in theory and wrong in practice.

We have had it demonstrated very thoroughly that carbolic acid will positively *not* pass through its own coagulum. For that reason alone it would seem that carbolic acid should be ruled out entirely, and for another reason it should be ruled out, viz.: on account of the insoluble coagulum that it forms with albumen, its use very much interferes with bleaching the crown of the tooth in which it has been used, should that ever become necessary by accident or otherwise. For these two very good reasons carbolic acid should no longer be used for this purpose. The creosote found in nine out of ten dental offices contains carbolic acid and will coagulate albumen, hence should be ruled out for the same cause as carbolic acid. If we should have a perfectly pure article, it possesses not one good quality over some other agents and its odor is very much against it. Hence unless we can find a better reason than merely habit let us use it no more for this purpose.

Physicians have long known that an animal fat is far more readily absorbed than a mineral fat. For this reason lanolin, an animal fat from sheep wool, is far preferable to vaseline, a mineral fat.

Lanolin is now accepted as the animal fat which has the greatest diffusion or absorption power, and is so recommended by such men as Prof. Cotton, of Rush Medical College, and Prof. Bolles of, The Massachusetts College of Pharmacy. It was recommended for this particular use by Dr. W. A. Johnston, of Peoria, Ill., in a paper read before the Illinois State Dental Society in 1888; also by Prof. Harlan, who gave the following formula in his paper read at Boston. Arsenious acid $\bar{3}j$, hydrochlorate of cocaine $\bar{3}ij$, lanolin oil q. s. to make stiff paste.

Lanolin has the advantage over an essential oil in point of odor—a point, by the way, which is valued too little by dentists, and, as a consequence, it is not an unfrequent thing in most dental offices to hear the remark, “It smells like a dental office,” which remark I very much dislike to hear about my office and try to avoid it if possible.

Having the rubber dam in place and the tooth thoroughly dried, a small portion of the paste should be put on a very small piece of well sized paper and carefully placed over the exposure.

This to be covered with a piece of thin metal which is concave on the surface next to the pulp. These pieces of metal I am in the habit of making out of thin aluminum by cutting them out about the desired size and indenting them with a small, round-pointed instrument. The use of aluminum is purely habit. Perhaps other metals are just as good.

By using this metal cap, which it takes but a moment to apply, pressure upon the pulp is avoided, where oftentimes it would not be if the cavity were sealed without it. Thus avoiding the greatest cause of pain in devitalization by arsenic. This should be sealed in with gutta-percha and allowed to remain on an average of forty-eight hours.

Before dismissing the patient, it is well to wipe off the teeth and adjoining gum with a fresh preparation of dialyzed iron as an antidote to any arsenic that may have been accidentally lodged where it was not intended and where it might do harm.

The first action of arsenic upon the pulp is to cause congestion. This may be to a great enough degree, *i. e.*, to cause pain for an hour or so. As a precaution against this it is well to apply a counter-irritant to the gum. Tr. iodine is a good one. As another precaution, I am in the habit of giving my patient a capsicum plaster or two, with instructions how to use the same in case of pain.

By taking these two precautions, I seldom have a patient suffer during devitalization by arsenic.

At each sitting use the dam, for I believe, as some one has said, "Allow nothing to enter which is not placed there by the operator."

When my patient returns I remove the paper upon which my arsenic was placed. Wipe out the cavity with a pellet of cotton saturated with a fresh solution of dialyzed iron. Dialyzed iron is rather an unstable article and loses much of its antidotal properties if old. If the exposure is small I enlarge it. Then apply a small pellet of cotton saturated with a saturated solution of tannic acid in glycerine. This is sealed with gutta-percha and allowed to remain ten days. At the end of this time the pulp will have become very materially lessened in size and much toughened, due to

the tanning action of tannic acid and the affinity for water of the glycerine. It will now usually come out whole from the single-rooted teeth and correspondingly well from the others. For extracting the pulp I have had better success with jewelers' broaches and cotton than with the barbed or hooked broaches. These broaches, as they are found in the jewelers' supply houses, are tempered very hard. The first thing is to draw the temper and you have a very tough broach with four corners, which corners aid very much in winding and retention of the cotton. Wind on this a few shreds of cotton and pass into the pulp canal along the side of the pulp, then turn the broach in the direction which will unwind the cotton, continuing the revolutions until the cotton is rewound in the opposite direction from the first. In so doing the pulp will have become entangled with the cotton and come out with it. This method I find quicker, surer and less dangerous than with barbed broaches.

Right here let me call attention to the fact that many of us who pretend to practice antisepsis in the removal of the dental pulp, do not even practice common cleanliness. In the first place, how many of us thoroughly sterilize our instruments and broaches?

One says, "I do, I dip my broaches in a five per cent solution of carbolic acid each time before I use them." Another answers, "I do, I use 95 per cent of carbolic acid in the same way." Another uses resorcin. Another H_2O_2 , and still another puts his faith in oil of cassia.

According to the experiments of Dr. Miller, of Berlin, as given in the *Cosmos* for July, 1891; no one of these can be depended upon to thoroughly sterilize an instrument inside of one to two hours.

His experiments shows that sterilization can better be accomplished by boiling in water for five minutes.

In the same paper he recommends a one or two per cent solutions of carbonate of sodium as having a little stronger action than water alone. Its chief advantage being that the rusting of instruments which is likely to occur when water alone is used is avoided by the use of the sodium.

Secondly. How many of us use even ordinary cleanliness in the matter of cotton. I'll venture that a great many of this society allow their cotton to lie upon the operating table loose.

It is handled while your hands are infected with the pus microbes from the abscess you are treating. It is handled many times dur-

ing the time each patient is in the chair. Then you put some of it into your pulpless tooth which you have taken so much care to protect from infection by microbes so far.

Your patient comes back in a few days and you are astonished to find pus there. Gentlemen if you practice antisepsis in that way don't say as many dentists have said to me, "I don't see as it makes much difference whether we are so careful about applying the dam every time. You will have pus present about once in so often any way."

Gentlemen, the reason so many operators do not have the success they think they should have when they attempt to practice aseptic or antiseptic surgery, either dental or general, is because they do not follow it out in these little things. They think they practice antisepsis and do not, hence they have poor results and will condemn the whole theory, say that theory and practice do not go together hand in hand.

I will pass around a little device which I use for cotton. It is merely a little tin tube with a spring in it. To one end of the spring is a piece of tin which is just the size of the inside of the tube. My tinner made it for I think about ten cents. I gilded it and fasten it to the under side of my table, where it is out of my way, by use of two tin bands and four little screws.

By using such an appliance you need only touch just the cotton which you pull out, except of course when you fill it. Then your hands should be clean.

Some will say what have you gained in not taking the pulp out at the previous sitting, instead of applying the tanning preparation.

We avoid pain and hæmorrhage.

The tannin prevents the escape of the red blood corpuscles, and the pulp separates as an eschar. This is a very important point, because we here avoid to a certain extent a source of great danger. It is a well authenticated fact that red corpuscles left in the pulp canal will lead to discoloration of the tooth. Hence safety lies in not permitting hæmorrhage to occur.

When the pulp is all removed the canals should be thoroughly dried.

Prof. Harlan says absolute alcohol in excess may be used and evaporated by hot air. He claims that alcohol used in excess will dissolve its own coagulum, and thus is not objectionable on that score.

I placed a drop of egg albumen in this test tube a week ago last Monday, and filled the tube with absolute alcohol. As you see it is not dissolved yet. The coagulum is broken up by my shaking the tube in my efforts to dissolve it, but is *not* dissolved.

I doubt about getting a larger proportion of alcohol to albumen in a tooth than this, and if we did we could not keep it there long enough to dissolve the coagulum.

Consequently if we use alcohol to dry a pulpless tooth, we must leave a coagulated substance there. Prof. Harlan tells us in the same paper that "All soft tissues coagulated are either transformed into calcific or corneous bodies, or are exfoliated by virtue of the vitality of the underlying living tissue, resulting from the changing function of the immediately subjacent layer of cells or," (now mark the words) "or such coagulated bodies immediately become the prey of anærobic microbes present, and in due course are completely destroyed by them and appropriated as food for their sustentation." The final result is first a discolored tooth and later on abscess."

We cannot know that we have not left a few anærobic microbes in the root of a tooth, which will cause trouble. Therefore it is never quite safe to use in the operation an agent that will coagulate albumen.

The Gilmer electric root dryer when properly used, is the best thing I know of for this purpose.

PRESIDENT'S ANNUAL ADDRESS.*

BY DR. M. L. HANAFORD, ROCKFORD.

I count myself happy to-day that, though I am expected to say something to you upon this occasion, I am required in the saying to be neither scientific or logical. I cannot give you history, for as a society we have hardly made history. I may not, on the other hand, hope to be poetic like our esteemed former president, for I have not like him the divine gift.

What then shall I offer you?

We have laid down our excavators and locked our office doors, that we may spend a few days together for what purpose? That we may learn here how best to prepare a cavity, pack gold, extract a root or construct a plate? I answer yes, and no, yes if you mean

*Read before the Northern Illinois Dental Society, October, 1891.

that these are important matters, no if you mean that they are all important, or are to be considered as ends in themselves.

We are met, if I understand the intention of such meetings as these, that we may add to our stock some of the elements which go to make cultivated, successful professional gentlemen. To this end it is necessary that each one of us shall do his part toward producing an atmosphere of ideas and enthusiasm from which we may absorb that which will strengthen our weak points and give us inspiration all along the line. If we were asked "What are the elements of success?" I doubt if our answers would agree very well, and even though we might all admit certain qualifications as necessary, we should still differ as to their relative importance.

Conceding that we have a right to independence in our ideals, we are assuming too much if we do not constantly seek by study and comparison to modify and improve those ideals.

One of the best opportunities for measuring up and correcting our own standards is offered by the Dental Society when rightly conducted. That our meetings may be productive of the greatest good, it is needful that our discussions shall not take the form of mutual admiration; or that we speak, not to say boast, only of our successes, thereby discouraging our neighbor, or possibly disgusting him with what he considers extravagant assertions.

I think if we examine the matter carefully and honestly we shall find little foundation for boasting.

Consider for a few moments the less creditable side of our case. Is it not true that the skill and delicacy of touch of dentists has been so much talked about and magnified that like a so-called conscientious liar, we have at last come to believe our own words. I doubt if many of us would care to compare our work with the productions of the best men in other lines of handicraft. Have you ever stood by the bench of a skilled watchmaker? Have you ever compared your finest specimen of crown making with the work of a fine jeweler? Have you ever been in a machine shop and watched a good "vice man" use a file? If not, try it and I don't believe you will be found very soon boasting of what dentists can do.

I was shown the other day a plaster cast of a baby hand, made by a lady artist of my acquaintance. It was so beautiful that I exclaimed. "Tell me how you work plaster, for this is to me a revelation." "Oh!" she replied, while I blushed for shame, "I don't

suppose I could teach you, a dentist, anything about plaster." And indeed there was nothing in her method but what every dentist of experience knows, the secret was no secret at all, it was in the wonderful skill of eye and hand.

It is a fortunate thing for the average dentist that patients who possess the kind of skill and taste here spoken of cannot often in the nature of the case, critically examine his work. Else he would be mortified at the disclosure of cavities illy prepared and stuffed with ragged amalgam fillings, crowns and bridges, such as would justify a prosecution for malpractice; beautiful teeth mutilated with disc and file. But why prolong the list? If any one of you were put upon the witness stand, enough evidence could be got from your observation to prove that the average dentist is not a fine workman.

"Pictures," said a great artist, "come out of one's head." "Fill teeth with brains," said an honored dental instructor.

How many of us grasp the idea here intended in anything like its fullest significance and are governed by it in our operations from day to day? How do we measure up to that ideal man who sees the end from the beginning, who makes a study of his patient as an individual, and different from all other individuals; who balances the necessities with the possibilities; who studies the choice of materials for fillings, times for operating, etc., as to the probable effect on both mind and body; and considers a host of other things which even now crowd themselves upon your thought?

If we accept such ability as an element of ideal success, as it seems to me we must, we must eliminate the whole commercial idea, and say that we may not treat a patient merely as a contributor to our bank account, who brings his teeth to be cut and hammered at so much per hour. On the contrary, we must recognize that a dentist's patient is a human being with prospects for continual existence, and whose right it is to leave his hands no worse in any particular than when he came.

A mechanical ideal adhered to may lead to the worst failure. That old familiar joke, "The operation was a success but the patient died," must have had a reason for being, and possibly we as dentists may have sometime in a somewhat modified way contributed to that reason.

A beautiful contour filling is a failure if the patient be sent home in a hack to suffer for days or weeks from nervous shock, and

there are more martyrs to such misdirected zeal than we are wont to think. Said a lady to me, as she took a seat in my operating chair, "I have been warned by my physician to give vent to my feelings, to knock over your instruments if I please in the hope that I may this time escape a painful illness such as I have formerly experienced consequent upon the intense nervous strain due to the effort at self-control."

Now with such a patient, lofty ideals of thoroughness and perfection of finish ought not to be adhered to. The game is not worth the candle. Milder methods, easy and short operations are indicated and will be resorted to if the dentist desires to "save" the patient as well as the tooth.

You remember the recent utterance of Dr. Allan, of New York, touching the subject, and also the amount of reproof and unfavorable criticisms with which he was overwhelmed. Hands were upheld in holy horror that a man could be so misguided as to advocate an operation at *any* time, which should be less than a "full contour"—"nature's model," etc., etc., *ad nauseam*. Attempting no defence, as the gentleman has shown that he is perfectly able to take care of himself. I should like to be put on record as saying, if I were able, exactly what he said in that paper. I believe there was and is need for just that note of warning, and that we cannot afford to ignore it.

There remains to me space to speak only very briefly of one other essential qualification and that is tact, which includes manners.

The dentist should be able to calm the fears of timid patients, to argue convincingly without giving offense; in short to compel confidence.

How perfectly some men whom you and I know have mastered this principle, and how miserably others have failed to do so.

A certain acquaintance with a patient is necessary to the best success—thus it is said that great artists recognizing this principle usually commence operations by dining with their subjects. To sum up and unify these rambling remarks:

First. It is our duty to look well to our ideal. While we cannot hope for perfection we should cherish the truth tersely expressed in the old couplet, "Who aims the sky shoots higher far than he who means a tree."

Second. Being not discouraged by failure, still a knowledge

of the vast number of operations badly done, should, for the present, prevent our having any feeling of vanity.

Third. The truest success does not always mean mechanical perfection.

Fourth. A successful dentist must have a thorough knowledge of human nature, which can only be acquired by the most of us, by the closest observation and study.

THE USE AND ABUSE OF COPPER AMALGAM.*

BY H. REID STALEY, D. D. S., LANARK, ILL.

We have nearly all used copper amalgam to a certain extent, either with satisfaction or to our sorrow. It has been used more in the last four or five years than ever before, although it was used by a few dentists as many as fifteen or more years ago.

When Kester, Stowell, Ames and others placed their copper amalgam on the market a great many dentists adopted it and made exclusive use of it, but I doubt if they use it to that extent now.

We see articles in our journals where one dentist speaks favorably of it, while another condemns it to the utmost; some will say they use it in a few cases yet, and others that they have abandoned the use of it entirely on account of it being affected by the fluids of the mouth.

Copper amalgam is a metal which has been proven that it cannot be relied on for exclusive use. It, like all other metals and filling materials, has its place, and out of its place we will surely regret the use of it; and in order to find its place we must experiment and investigate.

The greatest cause of so many members of our profession abandoning the use of copper amalgam is that they have failed to properly investigate its use. Because they had some fillings fail and had to cut them out and replace them they give it up and say that it is not reliable. But yet, do we not see some fillings that are a perfect success and that we feel proud to see years after their insertion, with their sharply defined edges and such a nice distinction with the perfect enamel edge around it; while on the other hand we see a filling in the same mouth that has wasted

*Read before the Northern Illinois Dental Society, October, 1891.

away and the edges of the tooth standing up liable to be broken away in mastication, showing that copper amalgam is a complete failure in that cavity. Now why is it that one is a success and a permanent filling and the other a failure? Here is where we have a chance to investigate and because the one was a failure shall we give up in disgust and not use it again?

In another mouth we find a filling in the same position (as the one that failed) which is in perfect condition and has been in a great deal longer, but we notice that the successful one is black while the other is of a bright grayish color. We surely must come to the conclusion that it is the action of the saliva or the condition of the mouth that makes the difference and not the metal itself.

If we will observe we will find that the one that failed was used more than the other in mastication and its general surroundings were cleaner than the one which turned black.

When I first commenced the use of copper amalgam I was pleased to see some fillings keep a nice bright color and wished they would all stay that way instead of getting black, but it was not long until I was glad that some of them did turn black.

It seemed rather discouraging when I had to cut out some of my fillings and replace them with other amalgams, for it is no small task to remove a copper amalgam filling. But I did not give it up, for when I saw how well some of the fillings were preserving the teeth I knew that copper amalgam was all right in its place and that I must find the places where it could be relied upon if I continued the use of it.

Our great fault is that we do not exercise enough judgment as to the application of the different materials we have at our disposal.

We cannot rely upon gold for saving all teeth we are called upon to fill, nor on amalgam, but should use that kind of amalgam or filling material which our experience dictates for each particular case, and we should always be on the lookout for where and in what mouths each material is the most successful. We have no particular rule to govern us in what materials to use for all fillings but must rely on our own judgment and past experience.

I have found that the rule by which we may *generally* be governed in the use of copper amalgam, is that it may be used wherever the process of decomposition takes place in the fluids which surround

the fillings, or where the surface is not kept *clean* by the action of the saliva, by mastication or any other cause. If the condition of the saliva over the surface of the filling is not such that it will oxidize (turn black) it will disintegrate or waste away, and that is surely where copper amalgam should not be used. Dr. Miller states in one of the journals that acetic acid coming in contact with the oxide on the surface of the filling forms the subacetate of copper which is a very active poison.

This seems true with those fillings which we see apparently wearing away and that new compound which is formed is surely carried to the stomach and is more or less injurious. It would seem poor practice for us to insert fillings, which in a few years would be carried to the stomach to inflame the tissues thereof and impair the health of the patient.

But when a copper amalgam filling oxidizes or keeps its black color there is no compound or waste product from it to be carried to the stomach any more than from gold or other metals, for I have seen black fillings which have stood for years and there was just as much metal there as when they were inserted, so I deem a filling that stays black as permanent as any material which could be used in those places.

Some speak of them as dirty black fillings and unsightly which is very true, but I have seen copper amalgam fillings (in the mouths of some patients who apparently never knew what a tooth brush was for), which were as black as the ace of spades and were the cleanest looking of any part of the teeth, and in such a mouth is where copper amalgam is indicated with but few exceptions.

If I find a patient that does not take much care of his teeth and it is not likely that he ever will, I use copper amalgam in almost all cavities except on the grinding surface of the lower molars or large surface fillings in the upper molars and we can rely on it oxidizing and preserving the teeth better than any other amalgam, and will feel proud in after years to see a black filling with well defined edges which has prevented decay under all the filth which covers and surrounds it; and in a country practice we find plenty of such mouths.

I invariably use copper amalgam where the cavity extends below the margin of the gum or where it will be closed up in tight approximal places and on the buccal surface if it does not extend

too near the grinding surface; on the buccal surface of the superior molars it can more especially be relied on. Again, it can be relied on in the little pits or fissures of the superior molars if the patient is not one that takes extra good care of his teeth and if there is a little deposit or discoloration in the fissures.

As a metal for filling the wisdom teeth it has (in my estimation) no equal except in a very few cases, and those are principally on the grinding surface of the lower wisdom teeth where they come far enough forward (from the loss of the first or second molars) to be used a great deal in mastication.

I have used it at the cervical margin of approximal cavities in connection with other amalgam or with gold, and with excellent results so far. Some claim that at the cervical margin is where it disintegrates and fails, but I think it as reliable as any other filling material in the hands of those operators, but it was a new material to them and if it failed of course they think it the fault of the amalgam. I have failed to find a copper amalgam filling that has disintegrated or failed at the cervical margin first, and there is just where I think it can be relied on if properly manipulated.

We do not take enough of the blame ourselves for the failures of our fillings at the cervical margin; it is the hardest place to operate and where the most guesswork is done. We put a large chunk of amalgam into an approximal cavity and crowd it up to the cervical margin and press or burnish the surface down so that it looks as though it is condensed and go on with the filling, thinking that every thing is perfectly tight, and yet the amalgam is hardly touching the cervical wall in some places, let alone being thoroughly condensed against it, or if it is it probably is left overhanging the edge and not polished down properly, which affords about the same opportunities for decay.

The mercury should be squeezed from copper amalgam through a piece of chamois skin with a pair of pliers and packed in the cavity in small pieces under good hard pressure so that when full it can be burnished down hard, as any other amalgam should be. I generally use a matrix for approximal fillings and finish them down with a burnisher and E. P. Brown's silverine strips.

There are a great many different makes of copper amalgam on the market and there is not so very much difference in them, but yet we should use one that works smooth and does not seem gritty or dirty. The dirt is the oxide of iron and copper and

causes the discoloration of the tooth structure, which we can avoid by washing it in alcohol, solution of soda, or a one-fifth solution of sulphuric acid.

I do not want to be understood as advocating the use of copper amalgam to a very great extent for it takes so long to find out where its place is that by that time there may be a goodly number of the fillings to replace.

If you have not tried copper amalgam yet I would say use it sparingly and only where you are sure that it will oxidize, and those who have used it almost exclusively know that experience is a dear teacher, after they have had to cut a few of them out. The best way to cut them out, I find, is to use a sharp fissure bur ground to a chisel point. If you have not had any experience in removing them you most likely will within a few years.

“I WOULD SUGGEST.”*

BY CLAUDE A. SOUTHWELL, D. D. S.

I do not come before you to-day to read a paper on the investigations of the microscope, the study of micrococci, or enlarge on the bacilli in the sputa, or even go into details of chemical laboratory work, but simply to offer a few suggestions that have, from time to time, come to the writer. Even the young can suggest ideas to older ones, and if any of the suggestions herein contained do not meet with your approval, or treads on your corn a little, seemingly, do not feel that any personal feeling has been allowed to enter its construction.

First of all, gentlemen, allow me to suggest that we all leave our individual grievances at home this year and that we will all appear better if we appear without the least sign of a chip on our shoulders. We have already reached our majority (this being our twenty-first annual session). We are no longer boys, but men, endowed with dignity, kindness and charity, and we must never forget the position we occupy. Some of our past sessions have been characterized by unmanly scenes, and I for one trust all personal animosities will be buried forever.

I would suggest that the committee on membership make an effort to stir up a more active interest in some of the members of

*Read July, 1891, Before The Wisconsin State Dental Society.

this society, those, for instance, that year after year never attend the sessions, but simply pay dues and assessments.

There is some excuse for an aged member, but the young blood of this society should not be left to sink into the stage of indifference. There are such men on our books, I regret to say, and it seems to me they should be rescued. They are no benefit to the society, the society no benefit to them. Each year they pay their dues and that is the last heard of them till the next year, when they pay their dues again. Some of these drones are like a sponge, soak up everything they can get and give nothing in return; others who cannot teach or be taught.

I would suggest that the publication committee be required to publish the annual proceedings of the session for which they are appointed to serve, and they are not to be considered relieved until the proceedings are printed. A sufficient number of copies be printed to supply at least one copy to every dentist in the State. This will be the means of reaching those who think we assemble "to have a good time, blow our horns and have a grand bum," as one dentist in the State expressed himself. Show the non-members what the society is doing to advance the interests of the profession.

We can establish our standing among dentists much better by the publication of our proceedings in a single volume, than by depending altogether on the dental journals to place our matter before the public. I would suggest that the annual meetings be held in different sections of the State occasionally, and every effort possible be made to secure a large amount of new material from each district and then finally settle down in Milwaukee, and make that our headquarters. By this means we will be able to reach a good many from the interior who cannot always get long distances from their home offices.

I would suggest that the master of clinics make a special effort to have a large clinical coterie at each annual session, to make our meetings attractive, and secure some outside assistance, if necessary, as a leader.

I would suggest that the chairman of the executive committee urge the essayists the practice of having their papers ready at least four weeks in advance of the session, that they may appear in the official circular, thus giving members the opportunity for preliminary readings before papers are read, thereby giving members a wider scope for discussion.

I would suggest that the executive committee, in securing halls for our annual sessions, take into consideration the acoustic properties of the meeting-room, the quietness of the surroundings, so that the papers and discussions may be heard by every one present. For we all know how noises detract the attention from speakers.

I would suggest, gentlemen, that we convey to our female patrons our best thought and knowledge concerning the early decay of the teeth, when asked. How many of our patrons ask this question, should they not know it? Are we to keep them in ignorance of the laws governing the formation of new structure? Women are the life-blood of our existence, and we know it. No matter how much knowledge is conveyed to them there are many who would pay no further heed to it. Many are grateful indeed for the new enlightenment. Shall we keep this knowledge from those who ask it? Shall we plead ignorance of the cause? Shall we say it must be hereditary, or be evasive and call it constitutional disturbance? No, gentlemen, it ought to be our duty to instruct those who seek advice. "Many will listen, but few will heed." I hear some one say: Never mind, our efforts are appreciated for all that.

I would suggest that one member of the Executive Committee constitute the Master of Clinics and in making such appointment the president shall designate which member shall fill the position. Heretofore it has been very conflicting to have the Executive Committee and the Master of Clinics so far apart. It necessitates so much correspondence and is usually only partially done. Former experiences will prove the value of this suggestion.

I would suggest that we, as professional gentlemen, have a notice hung in our offices announcing "Office consultations cash." Many times patients will come into the office, enquire prices, class of work, style of teeth, in fact, gain all the points about artificial work and after consuming a great amount of our valuable time depart and they are seen no more. They have gone to some other dentist.

On the contrary, I would suggest that no such notices be hung in our offices. We are expected, as business men, to give patrons all the information required about our goods and if they are able to judge the difference between good and poor work, or like someone else's style better than ours, they have the privilege to buy where they choose. We all meet these shoppers, but we are not able to say who are shopping and who are not.

I would suggest that we, as professional men, be upright and courteous in our intercourse with the public and of our professional brethren. We should always guard against disparaging the family dentist by hints, inquiries, or any other means calculated to weaken the patient's confidence in a neighboring practitioner, when called upon to give temporary relief, advice, etc.

I would suggest that it be considered unprofessional, ungentlemanly, to estimate the cost of work performed by another dentist. We are unable to tell, by looking at work, how much time or patience the work demanded. Never make it a practice to tell how wonderfully successful you are in all operations on the teeth, and how much inferior to you your neighbor is. If you are superior the public will find it out and respect you the more if you are modest and courteous in your behavior toward your fellowmen.

I would suggest that inasmuch as this society has secured the services of a stenographer to report our discussions, that members be expected to talk to the point, and not get so far away from the point that it is hard to get back to it. Every word uttered is taken down, so economize on your words, gentlemen, and avoid too lengthy arguments.

I want to suggest a compliment to the society in securing the services of a stenographer, as the brightest thoughts in discussions are lost, owing to the inability of the secretary to write as rapidly as the average person talks.

I would suggest that we all remember that the stream never appears at an altitude greater than its fountain, and that the standing of the Wisconsin State Dental Society will be represented in a degree consistent with the standing of its membership.

I would suggest that the Wisconsin State Dental Society is in no degree a mutual admiration society, and that a certain degree of individual merit should attach to all candidates, and that it be considered insufficient to the committee on membership that the candidate is simply "a good fellow," and will assist in paying the bills.

I suggest for the consideration of the present membership, that the society's present standing is simply the result of a careful selection of its membership in the past.

I suggest that a candidate for membership who has not sufficient confidence in his own merits, that he is not only willing but anxious to submit to an examination, be considered unworthy and

incompetent for membership. I feel that the time is past that the Wisconsin State Dental Society should be considered as a school for the education of incompetents, and that this society is not so near a condition of bankruptcy that it must let down the bars for the admission of all who crave it, unless an examination shall be the means of demonstrating their worthiness, and I further suggest that any change made whereby the test for admission shall be made easier, is simply suicidal and will result in the final dissolution of this society.

Lastly, I suggest that our next place of meeting be "Milwaukee."

THE TEETH AND GESTATION.*

By H. H. SCHUMANN, D. D. S., Chicago, Ill.

The mere mention of pregnancy suggests to the mind of all a deranged, and in a certain sense, an abnormal condition of the system, involving among many physiological changes, also a change in the quality and quantity of the excretions of the mucous membranes rendering these latter in an increased amount, and acrid in reaction. In speaking of a pregnant woman we recognize one whose particular office at that time is to reproduce within herself a human being, or, in other words, she is a being, who is compelled to furnish either from new food taken in, or if that be of an insufficient quantity or quality than from her own self, sufficient cell material to build the frame of another. One thing is sure, that the material for this new frame *is* produced, but how much of it is derived from the extra amount of certain foods taken in by the mother system and how much from the mother's own tissue, cannot be wholly determined, but it is the object of every physician to derive as much of the new strength needed, from new material, and to use up as little of the mother's own strength as possible. A child in utero feeds upon its mother, or, as it were, the mother is using up her own constituent material as Dr. Tanner did, while fasting forty days, consuming seventy-five pounds of his own flesh—or like hibernating animals.

Before suggesting to you a manner of treating the teeth during gestation, let us consider their condition during this period, the cause of that condition, and then the remedy will suggest itself.

As Dr. W. H. Dwinelle suggests, the causes may be both 1st

*Read before the Northern Illinois Dental Society.

local and 2d constitutional. Among the local causes, let us count before all, the acid condition of the oral fluids. Among the constitutional causes the most important are the nervous derangements of the system and the profound mental disturbance.

Before going any further on this we may stop here for a moment, and recapitulate the manner of waste and repair in our systems. We all know that every voluntary or involuntary movement, be it the lifting of a foot, or an inspiration, causes a certain amount of waste, a dissolving of nervous, muscular, brainy and osseous tissue, all in proportionate amount; now then, how is this waste repaired? The food taken in is digested in the alimentary canal, is analyzed in the different blood and chyle producing organs, and is then distributed throughout the body in the form of atoms of muscle fiber, bone tissue, etc., to those places requiring new strength and repairs. The corpuscles are the distributors of the nutrient material in the system, both to hard and soft tissue, thus sustaining the life of the old, and, at the same time, assisting in the production of new tissue. If these corpuscles are not laden with the proper amount of pure material, then parts, or the whole system will have to suffer from such a disordered condition.

In the pregnant mother, the child is taking in a goodly share of these newly taken in building blocks, should they be of insufficient quantity or quality the child cannot satisfy itself on them and begins to destroy or rob certain kinds of mother tissue building itself up upon it. A large portion of tissue constituting our body is bone, composed mostly of lime elements, it is then, on that class of tissue, that the growing babe will draw on mostly, and if the mother does not partake of abundant food rich in lime, she will have to give up part of her own bone matter, and perhaps of her teeth, to the child. Do not let me be misunderstood, I don't mean as some of our writers of the day seem to suggest, that the mother's teeth and bones become weakened and decay simply because the demand of lime on them is so great. They do weaken and decay, and possibly this is partially caused by the lack of lime, but an equally important factor and cause for weakness of the teeth as well as other organs after pregnancy is, that the whole drain of new material taken in and a good share of ordinary circulation, nervous distribution and nutrition is toward the babe. No *new* strength is being added to the mother's own self but nearly all of it goes to the growing child.

The above will show how necessary it is to supply the mother with lime, bone-forming food substances. Hens, having no access to lime, will lay eggs without shells. Animals of the woods make trips to the "deer lick" to abate their longing for salts, all of these, and scores of others are but dumb appeals from the unsatisfied chemistry of nature. Let us quote from an able writer—"Assuming that we have a full appreciation of all the unhappy environments and associations connected with pregnancy, the exalted nervous tendencies, the mental and physical disturbances, the acrid and irritating secretions that come of them, the appeals to our higher sympathies and loving and tender care, giving the fullest meaning to the sentiment that the gentlest natures, when shattered by incessant pain, enfeebled by disease, often misrepresent themselves and permit the spasmodic throes of a pain-goaded organization to be the exponent of what *they are not*. Admit all these things, and assuming every sweet sentiment in tribute to "God's best gift to man," the practical question is still before us—the *treatment of the teeth during pregnancy*." As I said before, the principal local cause for weakness produced in the teeth and disturbances and weaknesses throughout the alimentary tract, is the acid condition of the mucous secretions. The same cause accounts for the exalted stage of sensitiveness in cavities of the teeth of the pregnant, to say nothing of the progress and rapidity of decay. The treatment of all these disturbances of all those produced by constitutional causes, lies in the proper care of the diet. The first step to be taken in this direction is to care for the proper supply of bone food. This latter is found in nothing better than *whole* wheat food—I lay particular stress on *WHOLE* wheat. It will only take a moment's time to tell you of an interesting investigation. It has been estimated that the average child uses one-half a barrel of flour every year, and it is known that there are from each barrel forty pounds of bone forming material thrown out. The child of civilized nations, does not partake of the wheat roughly crushed, but of finely ground flour, and is thereby deprived of twenty pounds in a year of the mineral constituents which should be taken into the system to make hard and flinty bones and teeth.

By estimating, it will be found that children of our nation have been deprived of four hundred pounds each, of bone forming material by the time they reach the age of twenty. This is deviating a little, in a certain sense from our topic, but is none the less

interesting. It is the outer four capsules of the grain kernels that contain the phosphate material which the mother needs, and which is wholly rejected in the manufacture of superfine flour, and I therefore lay particular importance on *whole* wheat food. Oatmeal is one of the best phosphate cereals. Dr. Dwinelle suggests using bone phosphate of lime, spreading it over the food by means of a pepper box, literally saturating the system with it. The phosphate used for this purpose comes from the bones of animals, not from the phosphate rock, that being inert in the system, while the former is readily digested. The washes and tooth powders used during pregnancy, and for that matter, at any time, should have bicarbonate of soda or borax, as a generous ingredient to counteract the oral acidity. As to attending to the teeth of pregnant women this is a question I have often been spoken to about. I certainly think that the toothache of a pregnant woman should be stopped at once by a temporary filling or even by extracting; the nervous shock of either of these proceedings will usually be less than that produced by suffering from toothache. I believe that all decayed teeth should be moderately cleansed and filled temporarily, avoiding long sittings and making them as few as possible. Extracting should be avoided, but if it must be done anæsthetics should be administered; of course all dental work should be attended to at as early a period as possible.

There is nothing original in this paper, I am simply recapitulating. I think that the use of animal phosphates is to take an important place in our practice. With children it has been already sufficiently demonstrated that a great deal of good can be accomplished, and I think that with it, many of the evils connected with our practice may be gradually overcome.

SOME OF THE PECULIAR PHASES OF THE AFTER EFFECTS OF LA GRIPPE.

BY R. G. RICHTER. D. D. S., MILWAUKEE, WIS.

The medical world has not yet determined the ætiology of la grippe.

At first it was claimed to be the effect of some germ, and until recently, this theory prevailed.

In Chicago a physician even went so far as to claim that he had discovered la grippe germ; but judging from the fact that he

has not written about it since, I think that he has abandoned his bug.

Later investigations tend to prove that it is of a miasmatic nature, which seems most plausible as it very closely resembles malarial fever.

If it is due to some germ, it would certainly be contagious, like diphtheria, scarlet fever and kindred diseases. It is a well-known fact, however, that it is not contagious, but infectious, which would prove the miasmatic nature of the disease. Whatever the cause may be, the fact remains that it takes a terrible hold upon the system and often with fatal results, not only from pneumonia, which at one time was considered the termination of its course, but it also affects the glandular and nervous system, in fact all the tissues, and leads to no end of complications.

From my own experience and that of physicians and specialists, I find that the effects of it are to intensify any pathological condition, either systemic or local, that may be present. It generally seizes upon the most vulnerable point to play its havoc. But as it is not on the general but on some of the after effects, as they appear to the dentist, that I wish to write, I will proceed to state how my attention was first drawn in that direction.

During and after we had our epidemic of la grippe a year ago last winter, I had several cases of acute gingivitis come to my office, that differed very much from the usual cases we have to treat, as I shall explain further on.

The first case was that of a young lady whose teeth I had taken care of for a number of years; she has always been very particular about her mouth and teeth, and for cleanliness it would be hard to find a mouth that was in better condition. Her health and the secretions of her mouth were so perfect that tartar had never formed on her teeth. She came to me crying one morning in the most intense agonies, one side of her mouth was so sore, she said, that she could not take any nourishment on account of the pain when anything touched her gums.

Upon examination, I found on the left side of her lower jaws, from the lateral incisor to the second molar, the gums intensely tumefied very nearly up to a level with the cutting edge and grinding surfaces, and extremely sensitive to the slightest touch. I took it for a case of local poisoning, but as she was suffering extreme pain, my efforts were directed to relieve her of that first. I tried cocaine with hardly any beneficial result; then with a fine

hypodermic point, I tried all the different remedies at hand, but could get no action; and even with the finest point, I was causing a great deal of pain. So I got desperate and resolved to try the heroic measure of depleting the gums by lancing. After about twenty minutes of rinsing with warm, carbolized water, and directing her to suck the gums as well as she could, relief came and a great deal of blood. I then painted the gums with aconite and iodine, fixed her up a bottle of mouth wash, and directed her to come again the following day. She duly made her appearance as directed, and I found the gums in a comparatively pretty fair condition. They were a little puffy and swollen between the teeth, but I could run the point of the needle in without much pain. The necks of the teeth were perfectly smooth and free from any deposits. I injected peroxide of hydrogen, scarifying the gums with the sharp point of the needle, which was followed by a ten per cent solution of resorcin. This treatment was repeated for five days, when I dismissed her as I supposed, cured; for the gums seemed to be in a perfectly normal condition.

About ten days later, she came in again with the same trouble, but this time it was in the gums around the right superior teeth from the cuspid to the third molar. I was completely dumbfounded, for I had examined her mouth thoroughly before dismissing her the first time, and found everything in a normal and healthy condition. Of course I thought she must have poisoned her gums in some way, possibly with chewing gum or some patent dentifrice. She told me she never chewed gum and only used prepared chalk to clean her teeth. I questioned her about food and medicines; in fact everything that I could think of, but could find nothing that would bear me out in my diagnosis of local poisoning. I pursued the same treatment as before, and was racking my brains to find some cause for this peculiar condition; when a few days later a physician, a personal friend of mine, came hobbling into the office with a crutch and a cane. La Grippe with which he had been wrestling for six weeks, had left him in a terrible condition; he was simply all broken up and a pitiable sight to behold.

When he took the chair he said: "For two months I have suffered all the tortures of hell, and now I shall have to lose my teeth; I have not been able to close my mouth or eat anything for two days."

Upon examination I found the same condition of the gums as in the first patient, only that it was in a superlative degree, and affected the gums around all the teeth, both superior and inferior, and also that there was a deposit of tartar around the necks of most of the teeth. The gums in this case were purple, and hypersensitive, and around some of the teeth, pus flowed from the necks upon pressure; the whole mouth was feverish and dry. It was extremely difficult to treat this case on account of the intense pain and reduced condition of the patient. The treatment in the main was the same as in the former case; but it was two weeks before the operation of scaling off the tartar could be performed; after which the cure was easily effected; assisted greatly no doubt by the improved condition of the patient, who by this time had thrown away his crutch and cane and was regaining health rapidly.

During my conversations with him and while he was telling me how the disease had affected his feet and different parts of his anatomy, the idea fastened itself upon me, that the grippe might possibly be the cause of this severe acute gingivitis, the gums in this case being a vulnerable point, on account of the irritating effect of the tartar, and the slight inflammation that must have been present before he was taken sick; this suspicion was greatly strengthened when my first patient told me that she had been laid up with the grip for two weeks before she came to see me.

After these, several other cases of a similar nature came under my care, and in each case I found that the patient had been a sufferer from the epidemic. I will not take up your valuable time by giving a detailed account of each of these cases; it would simply be a tiresome repetition; though there is one case which occurred last May that I wish to relate, because it illustrates the powerful effect of la grippe, even when the patient has had only a slight attack.

It is the case of a young lady who was just about to start on a trip abroad. Naturally everybody going abroad has the teeth examined and fixed up before going; I had filled some of her teeth and her mouth was in a perfect condition; she was to start in about ten days after I had gotten through. The epidemic was in full swing in Milwaukee at this time, and she was taken down with it for only one day. On the second day following, I was called to her house and found her gums in an acute state of inflammation. While I was there her physician called. I told him I thought it

was an after effect of the grip, and I wanted him to help me get her in a condition to undertake the voyage, by giving her tonics and strengthening the system. This has been my way of treating these cases lately, to try to assist nature to throw off the poison, in conjunction with local treatment, but he was one of those fellows who think a dentist can only pull teeth ; and he almost gave me to understand that he wished I would mind my own business and let him alone ; he diagnosed the trouble as a simple case of indigestion.

By the way, this is a thing we have all to contend with, once in a while ; and I think it is time some of these simple little ostriches that know it all had their heads pulled out of the sand and realized the fact that dentistry is a specialty of medicine. But to resume : I went about my work, injecting peroxide of hydrogen, at the same time scarifying the gums with the sharp point of a hypodermic, which took about an hour, and by that time the little pill man had left. Then I told both the father and the daughter that as there was no time to be lost, I wished they would follow my advice ; that I had had some experience with similar cases and would like to have the patient treated constitutionally. They finally yielded, and my friend was called and together we got her so she could undertake the trip in just four days. The gums were not entirely cured, but as the berths were engaged, she started with a mouth wash and a box of powders. When she reached New York she wrote me stating that she was all right and would start the following Wednesday. I consider this a peculiar case in as much as the patient had been ill only one day ; yet the gingivitis was as intense as in the case of a great many who had been laid up for weeks with this dread disease.

So much for gingivitis as an after effect. Of the other after effects there is probably none more difficult for the physician to deal with than that upon the nervous system and the accompanying neuralgic pains.

Of all the nerves of the system the fifth pair are more liable to irritation than any of the others. This is the great sensitive nerve of the head and face and is peculiar in this respect that it is both compound and special, that is to say, it supplies parts with filaments of sensation, with filaments of motion, and through one of its branches the gustatory, with filaments that pertain to the special sense of taste. All these filaments are liable to irritation, but none so much as those of sensation. From first dentition in

the infant to the loss of them in old age, the teeth in 99 cases out of 100 are a cause of irritation, to say nothing of the irritations this nerve is liable to receive from other causes.

The fact that this nerve receives so much irritation, makes it a vulnerable point of attack for the ravages of this disease, and that is why we so often have neuralgia of some of the branches of this nerve, as an after effect. The physician whom I mentioned in the early part of this paper, told me that every severe case that came under his care, was accompanied by trigeminal neuralgia. Now as the after effects make themselves felt for a long time after the patient is considered cured, these neuralgic pains are liable to puzzle the dentist more than any other specialist.

When these cases come under our care, the patient generally complains of pain in some particular tooth, which very often when examined, presents a perfectly healthy appearance; it may possibly have a small crown filling. I will not take into consideration the defective teeth which might themselves cause trouble, but to illustrate my point, I will take such teeth as where, after excluding all other causes of odontology, we are led to believe that the trouble is caused either by pulp nodules or exostitis of the root. To illustrate this, I will relate a case that came to a brother practitioner.

The patient complained of severe pain in the left first superior molar. Her suffering was so great, that she had not slept all night. The tooth had a medium sized filling on the grinding surface, but otherwise seemed perfect. I will not give you all his treatment, but after two or three days, he called me up by telephone, saying he had got to the end of his rope, and asked me to make an examination and try to relieve her, as she was suffering severely.

He had destroyed and removed the pulp and when she came to me, I removed the dressing and found the work of removing the pulp had been most perfectly accomplished. The canals were clean up to the apical foramina and the dressing came out white and dry. On questioning I found he had tried all the remedies that I could resort to, so I dressed the canals with chloroform, carbolic acid and iodine, using a fine gold point to carry the dressing well up, painted the gums over the root with aconite and iodine, and told her to take a seat in the reception room to await results. After half an hour's waiting, the pains had not eased up in the

least, but were just as severe as they had been for four or five days previous and not finding any apparent cause for this trouble, I questioned her about the grippe and found she had had a very severe attack for two weeks. Then I made up my mind that it was a case of neuralgia as an after effect of the disease, and told my brother dentist so ; he smiled in a sort of an incredulous way, and I guess he thought I was crazy, until I told him about some of the other cases I had treated, and then he said ; "Well, it is worth taking into consideration."

I dismissed the matter from my mind ; when a few days later, my telephone rang, he was at the other end and said ; "Doctor, I guess you were right about that case ; she is here now and the pain has left that tooth and gone to the right first molar on the other side." The reason that it affected the first molars in this case, may be that the roots penetrated into the antrum and that catarrh of the mucous membrane probably had irritated the nerves in some indirect way and made them a vulnerable point ; or possibly, the effect was due to some irritant to the posterior dental nerve.

These neuralgic pains are very puzzling, and since I have been investigating, I find that they are of quite frequent occurrence ; when there is no good cause to be found for them in the teeth, and the patient has suffered with the grippe, it is a case for the physician and not for the dentist to treat.

The other effects are manifold and of less frequent occurrence ; probably none of them are more troublesome than those upon alveolar abscess, or the treatment of caries of the maxillary bones ; in such cases, there seems to be a sluggishness and indisposition to heal ; the medicines do not have the usual effect and healthy germination is very slow.

I have two cases that will illustrate this point. The temperament of the patients in both is alike, and there is only about five years difference in their ages ; in both cases I amputated the ends of the roots and removed the carious bones ; one of the teeth is the second bicuspid and the other is the lateral incisor ; I operated on the incisor and on the second bicuspid two weeks later. The bone has re-formed over the second bicuspid ; and the other case, in which the patient had the grippe, I am still treating. The bone is re-forming but very slowly.

CROWNS.*

BY DR. J. O. BROWN, CHICAGO.

Crowns have been a boon to suffering humanity, are now, and ever will be such. There are a great variety of them, as well as a great variety of methods of mounting them. The pioneer crown was the old-fashioned one, mounted on a simple wooden peg of well-seasoned hickory or locust wood, but as time advanced, and our profession also, this wooden peg was discarded for a more substantial peg or pivot of metal.

"In 1840, Henry Lawrence obtained a patent for a pivot tooth which consisted of an ordinary pivot crown with a hole entirely through it, ending in a countersink to accommodate the head of a screw of gold or some suitable metal, by which the crown was secured to the root."

Dr. E. Parmly Brown was the first to invent a porcelain crown with the metallic pivot locked in the tooth. His crowns were made with the incisors and cuspids having one pivot while the rest had pivots to accommodate the roots of the teeth for which they were intended. These crowns were mounted either with gutta-percha or oxyphosphate cement. Dr. Webb used an ordinary plate tooth backed up with a heavy piece of gold plate long enough to form the pivot, and secured it in the root by filling in and building up the back with gold. Dr. Flagg used to make his crown by soldering a platinum wire to the backing and pins of a plate tooth, using the wire for the pivot, and fastening it with amalgam. There are a number of others who have had devices of their own, but time will not permit of individual mention of them all, as it is not so much the theoretical as the true practical points at which we wish to arrive. The Bonwill crown was an improvement at its advent and was a very good crown. The attachment being made by filling the hollow crown with some plastic material, either gutta-percha, cement or amalgam. The How crown was constructed in a little different form. It is a porcelain face, countersunk on the back or palatal surface, and has four pins backed in it, two on either side, but within the recess on the back. These crowns are anchored by means of clasping the four pins around a post sawed into the root, and then filled around the post and the back built up with either gold or plastic filling. The Logan crown comes next,

*Read before the Hayden Dental Society of Chicago, October, 1891.

and is well known to us all as being a very good and useful one and easy of adaptation to the roots of natural teeth. A Logan crown though, should not be mounted except with a band. A gold band should first be fitted to the natural root, after which a crown can very easily be adjusted to the band, and thereby a good and secure joint can be made and the root preserved. No crown can be put on with any security, either of firmness or of preventing decay in the root, unless the root is banded. It is almost useless to make any remarks as to the care that should be used in the fitting of these bands, for we should all be well aware of the many bad results arising from poorly adjusted bands. The Richmond V shaped crown makes a good and strong one, but has the same drawback as the others by not having a band around the root, and it would not be as easily adjusted as the Bonwill with a band.

Dr. W. H. Dwinelle was the first to suggest the banding of pivot teeth. This was in 1855, and his method was to back up a plate tooth and solder to the backing with a horizontal piece of gold at the top, and attach to the root by means of screws into the dentine, and also a large one inserted in the pulp cavity, and allowed to extend into the recess within the band, and the vacuum filled with crystal gold packed in around the projecting screw. In 1869 Dr. W. N. Morrison brought before the profession what would be more properly called a "cap crown" than a pivot tooth, as there were no pivots or screws used to retain it upon the root. It was made of gold of the shape of the natural tooth, and of the proper size to fit the root just under the margin of the gum. Dr. B. Beers also had his own ideas of a crown, and made his in the shape of a cap and inserted headed gold screws into the pulp canal, and then filled the cap with oxychloride of zinc and pressed it to place over the root. Dr. E. S. Talbot made an improvement on Dr. Beers' crown by making a band to fit the root and putting a partition or floor across the band and soldering it in place. Then he would perforate this floor, opposite the canal or canals as the case might be, and after setting the band on the root he would insert headed screws through the perforations into the canals, after which he would complete the operation by either filling the band with gold, or swaging a crown to fit either inside of the band or to slip over it, previously filling the cap with cement.

Dr. C. M. Richmond's method of making what is known as the "Richmond crown" is to take a strip of gold plate of sufficient length to encircle the root, make it to fit as snugly as possible, and solder the ends together; then solder a piece of gold plate to the grinding surface and fit the other end to the contour of the gum by grinding the approximal edges concave; after it is of the proper length the cusps are to be put on, which are made by melting scrap gold into buttons and soldering them on the cap in the proper places. It is then filled with cement and pressed to the proper position. At that time they used to drill a small hole through the crown to allow the surplus cement to escape and after the cement was thoroughly set would remove the surplus and fill the opening with gold. Dr. H. W. F. Büttner's method was a combination of ferrule, or band, encircling the root, and a center pivot. This makes an exceedingly strong crown, and owing to the manner in which the root is prepared by the special set of instruments it is bound to fit accurately, for the root is trimmed down on the face and trephined by the same sized instruments and the cap is made over a steel model of the same size. I forgot to say that this has a porcelain face made by accurately fitting a metal plate tooth to the labial face of the band and invest as all such cases, and solder up the lingual surface, after which it can be trimmed to the proper contour. The cusp crown was a device of Dr. H. C. Merriam. The roots were prepared with screws extending; the crown was then formed by making a band of gold and inserting a porcelain cap with cusps to correspond with the tooth, of the kind it was to replace. The collar was filled with either plastic materials used for filling purposes and the cusp cap pressed into place. Dr. Starr's method of striking up cusps out of gold plate by means of dies and counter-dies is by far the better plan, and then flow the cusps on the concave surface flush with solder of about two karats less than the plate, and then solder to the band. By so doing one is enabled to grind the cusps if they do not articulate perfectly with their antagonists. In my opinion the method employed by Dr. B. J. Bing of inserting an artificial crown to adjoining teeth by means of gold fillings is not a good one, and is a method I should never adopt nor advise. It was to make a cavity in the tooth on either side of the space to be filled, and insert a crown having the pins on the sides, and long enough to reach into these cavities, and then fill around the pins, and by so doing hold the artificial

crown in place. At the present day I do not think this method would be employed by any good reputable dentist. The best way of making porcelain front crowns is to make them with a gold tip on the grinding or cutting edges. This prevents the porcelain from chipping or breaking off, in a great many cases where it otherwise would if not tipped in this manner. They are also made so that the porcelain can be readjusted if broken off without removing the crown from the root. This is done by carefully fitting the porcelain to the gold part of the crown; then finish and adjust the gold part to the root and after it is securely fastened, then insert the porcelain face and fasten it in with cement.

A SUGGESTION FOR DENTAL SOCIETIES.

BY J. D. MOODY, D. D. S., MENDOTA, ILL.

The everyday operations of the office, such as filling, preparation of the cavity, etc., present so little that is new that it seems a waste of time to discuss them in our societies. It is only at rare intervals that anything new in these lines is presented. To write an elaborate paper on "Preparation of the Cavity," "Filling Materials," or similar subjects, in these days of excellent college teaching, is a waste of energy. While the discussion is probably necessary, the writing of such a paper calls for an expenditure of time and mental effort, that is warranted only by the most practical of results. In the reading of papers where a multitude of details are referred to, we do not retain them in the memory well enough to insure a profitable discussion. On the contrary, the discussion is often desultory and unprofitable. No discussion is profitable unless the best thought is brought forward. Yet it is by just such discussions as these to which I refer, that new ideas are brought out, that we make any advancement. If we cease telling each other what we are doing, and how we do it, we will retrograde instead of advance. Now what are we to do?

I offer the following suggestion: I believe it will many times prove to be of value. Instead of reading a paper on one of these common subjects, talk it. Write at top of a blackboard the subject under discussion, then under this the subheads. Taking up the first point under the subheads, write the keywords, the conductor developing each point before writing the next one. In this

way every point is clearly before the eye and in the mind at the same time and all the time. It holds the attention and is conducive to discussion.

I adopted this plan in presenting the trite subject of "Operative Dentistry," before the First District Dental Society of Illinois, at its September meeting in Peoria. It met with a hearty approval. When completed the blackboard presented the following outline:

OPERATIVE DENTISTRY.

WEDGING.

Rubber } thin.
 } thick.

Gutta-Percha.
Cotton.
Wax tape.
Wood.
Immediate

DAM.

Perfumed.
Small pieces.
Ribbed.
Clean. } good views.
Over several teeth } easy access.
Elastic fasteners. } dry cavities.
Napkin on chin.
Clamps } festoon.
 } stiff.
 } not too small.
Tie } floss silk,
 } linen thread 25.
Tongue holder.

CAVITY.

Space } to see.
 } to work.
Finish edge with strip.
Not too deep at cervix.
Decay—how much take out.
Bevel, not too much.
Undercut } slight.
 } enough.
Showing gold.
Finish } 00 emery paper.
 } strips.
Sensitive } dry. } sharp.
 } bur.... } stone cut.
 } gentle. } machine.

GOLD.

Drive wedge.
First piece sure.
Flat pieces.
Matrices.
Mallet.

PULPLESS TEETH.*

BY W. A. JOHNSTON, M. D., D. D. S., PEORIA, ILL.

This subject has the rich, meaty flavor of the *Castanea Vasca* concealed about its person, but, like the poor, it is always with us.

A pulpless tooth is not a useful member of society, in the highest sense of the word, but it is tolerated by the patient, because he is patient and long suffering.

From the moment a pulp becomes exposed, until the pulp chamber is solidly and thoroughly filled with gutta-percha, cement,

*Read before the First District Dental Society of Illinois.

gold, tin, lead, copper, paraffine, wool, charcoal, or other material ; the tooth is a source of trouble to the patient and a nuisance to the dentist.

A good, sound tooth has a lively, healthy pulp in its interior, and a tooth without a pulp is not good, or sound.

If it be true, that in the natural order of things, teeth become harder with age and denser as they grow older, from a constant deposition of lime salts by their pulps, it is also true, that when deprived of their pulps, they will not harden with age and time.

Some of the protoplasmic substance in the dentinal tubules, remains where it is when the pulp is removed, and if the tooth is not already of pretty dense structure, it will be discolored by the retrograde changes which must go on in the dead protoplasm.

Not only is a young tooth discolored, but it is weakened by this decaying animal matter and an additional reason is furnished why a pulpless tooth is handicapped in the struggle for existence.

A pulpless tooth is essentially a weak tooth, and as such it needs our tenderest care.

Deprived of its principal source of nourishment, it is, to a certain extent, a foreign body, and while it can be tolerated, it does not enjoy all the privileges and advantages of its more lively and vital brothers.

It follows as a natural consequence that a pulpless tooth will not stand a filling as well as a live one, for these two reasons. First, because it is partially dead, and therefore can make no resistance to the process of decay or to an external force which tends to produce a fracture ; and secondly, because AS A RULE, a pulpless tooth has a larger cavity in it than it would have were the pulp alive.

In this connection, the rule may be laid down that the larger the proportion of filling material to tooth substance, the more likelihood of failure. A perfectly sound tooth has no filling in it at all and no point where decay is *invited* to begin. The line of contact between a metal filling and the margin of a cavity is an invitation for decay to begin, and the longer this line is and the more imperfect the joint, the more pressing is the invitation, and the more certainly will it be accepted.

Added to this external danger, is the fact that in a *majority* of pulpless teeth that are filled there exists a tendency to decay, from within. If there is no partially decayed matter left in the cavity proper, to set up the process of decomposition, the organic matter

of the tooth itself is ready at the first opportunity to start a little trouble on its own account, for when life ceases death begins, "And so from hour to hour, we ripe and ripe ; and then from hour to hour, we rot and rot." With such a condition as this staring us in the face, the question naturally arises, "What are we going to do about it?"

Granting that the tooth is not as good as it might be, and that whatever we may do is not equal to Nature's best, how shall we patch things up to attain the best result possible under the circumstances?

Every one has an idea how this should be done, "And every man's way appeareth right in his own eyes." This paper is written solely for the purpose of opening a discussion as to what is the best method of treatment for a tooth, which, for any reason has lost that sensitive structure of nerve, blood vessel, and connective tissue, which for want of a better name, we call the dental pulp.

Two bodies cannot occupy the same space at the same time, and our first duty is to get the dead, dying or putrescent pulp out of the way. So far as the mechanical operation of cleansing the pulp chamber with broaches, smooth, hooked or serrated, there is no difference of opinion. The work must be done thoroughly, and the ease with which it is done depends upon the skill of the operator.

After the cavity is *mechanically* clean the work of securing *chemical* purity begins, and this is the rock on which so many operators are hopelessly wrecked.

The result to be attained is, first, the destruction of all zymotic, fermentive, morbidic, septic, anærobic, perapetetic, microscopic, bugs, bric-a-brac and bacteria ; and secondly to produce as near an approach to absolute dryness as possible.

Of the germ destroyers, whose name is Legion, each has its particular following, and all are more or less efficient.

Equally eminent men prefer entirely different antiseptics, and each professes to be perfectly successful (at least in dental societies) with his favorite remedies.

It matters little what agent is used so long as the result is satisfactory, each operator having his own preference, and that for the remedy which in his hands is the easiest of application and yields the best return for his labor.

In regard to securing dryness of the tooth, there is some room for a difference of opinion. The use of coagulants in a pulp canal

is very generally condemned at the present time, and for the excellent reason that a coagulated mass is a hard thing to handle.

Bear in mind that we are speaking of a tooth in which at present there is no pulp. Had we drawn this pulp out of the tooth with a nerve broach, very likely, on examination, a number of tiny filaments would have been observed which had been torn out of the tubuli of the dentine. If the pulp has become putrescent, softened, and broken down these filaments will not pull out, but break off and remain where they are and it is impossible to get that tooth clean *mechanically*.

The next best thing is to get all the moisture out that we possibly can, and the simplest way is by evaporation.

Absolute alcohol—which may be prepared for all practical purposes by placing a few empty gelatin capsules in a two ounce bottle of alcohol 95 per cent pure—has such a strong affinity for water as to make an excellent dehydrating agent.

This is especially true, since a union of alcohol and water is attended by a contraction of the volume and the moisture is drawn out of the tubuli, for when the alcohol is evaporated, it takes the water with it.

The plan of using a heated probe to dry out a pulp chamber is open to criticism. The probe, to be of any service, must be hot enough to have the same effect as a coagulating medicine, and this we wish to avoid. The same to a less degree is true of hot air.

The dessicated fruits which we get from California have been deprived of their moisture by a blast of cold air, it having been found that hot air, which was at first used, shriveled up the outside rapidly and, closing the pores of the fruit, prevented the moisture on the inside from getting out. This is exactly what happens in the use of carbolic acid, nitrate of silver, and other eschar forming drugs.

They are self limiting in their action, and the application of heat has the same effect.

In cooking a beefsteak, if you want it "rare" you hold it close to the fire, the albumen is coagulated on the surface and the juices retained inside. They can't get out, and you will burn the outside to a crisp before the center is more than blood rare.

On the other hand, if you wish your steak "well done" you hold it farther from the fire and allow the heat to gradually penetrate the substance, and if you keep it long enough in that position the

resulting sole leather will be hard and dry throughout, the juices having sizzled out through the pores which have not been closed.

This is the result we wish to attain so far as the pulp is concerned. We want to dry it all the way through, and not merely on the surface. Who has not seen a cornfield after a rain followed by a hot, dry wind? The surface is caked and baked hard. The hotter the wind, the harder the baking of the surface. Kick away the crust, and an inch below the surface is cool, moist ground, the hotter and fiercer the wind, the damper the ground comparatively.

If on the other hand, a cool gentle breeze has followed the rain the surface has not been caked nor crusted, but the earth two inches down is drier than under the crust formed by the hot wind.

Why is this? Because the hot wind, by rapidly absorbing the moisture and forming a roof of hard earth, prevented the water from escaping, while the cooler air coaxed the water away from the surface and it was constantly replaced from below by capillary attraction until a uniform dryness has been produced.

The same principle holds good with a tooth.

Apply cold air until you feel satisfied that you have drawn most of the moisture from the farthest point accessible, and then, if you choose, gradually warm your air blast until the tooth assumes that whitened, dried appearance denoting the absence of H_2O .

A word about filling pulp canals. The plan given by Dr. Taylor at the meeting of the Central Illinois Dental Society, at El Paso, about seven years ago, has never been excelled in the experience of the writer of this paper. After drying the root canals thoroughly, Dr. Taylor recommended flooding them with volatile eucalyptol. Waiting a few moments to allow the fluid to reach the most distant part of the canals, the surplus is absorbed with spunk and chloro-percha inserted in the usual way. The eucalyptol, being a solvent of gutta-percha, enables the filling material to find its way to the uttermost limits of the pulp canal, and so capillary attraction comes to the assistance of the dental broach. By utilizing the forces of nature combined with common sense and a skillful touch, even a pulpless tooth with a tortuous canal in its most inaccessible root may often be persuaded to become a peaceful member of the Dental Family, and from being a disturber of the peace and a disquieting element in the Human Economy, be brought into subjection and made a useful and honored resident of Dental Row, on Digestive Avenue.

A METHOD OF TAKING IMPRESSIONS FOR ARTIFICIAL DENTURES.*

BY R. S. RATHBUN, CLINTON, IOWA.

Whatever inspired the chairman of your executive committee to invite me to pen a five minutes' talk on some topic for this occasion may be plain to him, but 'twas a surprise to me, and you may be more so when I have done. In these days of lightning power, when the methods and doings of a quarter of a century ago, are recorded among the old fogies of to-day. It must have required no small stress of presumption for the doctor to presume to bring from west of the Mississippi one to occupy your time ; made so luminous by the radiations of such brilliant lights from the metropolis of the world's center—Chicago. My theme is not a new one, but an old method. The first thought that suggests itself to the inquiring mind on securing impressions for artificial dentures, is perfect adaptation ; involving ease, rest and comfort in wearing. The next is the material and method to secure that end ; of these many are prescribed. The one, however, that we are looking for, is the material most readily and equally applied to the parts involved ; and the method, the one which will bring said material from all points of the compass direct and with equal force to all parts alike. In my experience possessing the widest range, and yet specific in all cases, is the following : Select an ordinary impression cup, in size adapted to the case in hand ; then warm over a spirit flame or Bunsen gas jet, enough beeswax to secure the impression ; carry it carefully and firmly to place in the mouth, strictly noting that the wax is pressed closely to all parts to be involved in the impression, for neglect here often incurs failure further on ; remove, trim off excess and with fingers enlarge slightly that part involving the alveolar ridge, raise heel of impression a trifle, then with wax spatula, warm, cut a few grooves to better secure adhesion of plaster thereto. When thus armed with a perfect impression cup, mix a sufficient quantity of fine plaster to the consistency of thick cream, largely fill cup as above prepared, then carry it to place in the mouth ; in full upper impressions carry heel of cup as much in advance as the case will permit, thereby forcing excess up under cheek and lip and outward, which will prevent plaster from running back in the mouth and causing

*Read before the Northern Illinois Dental Society,

strangulation, etc.; for partial impressions use same method, observing to cut groove in wax between teeth to secure plaster, but be sure not to change wax at neck wall of natural teeth, as you thereby largely avoid breaking the plaster impression thereat, on removal from the mouth. The advantages of this method seem pertinent to me without further comment. The advantages attained by its use over other materials and methods are worthy a trial. To the student or young practitioner or even the older one who as yet never deemed it worthy a trial let me suggest, try it, and you will bring to your patients who are afflicted by wearing false teeth, that rest and satisfaction hitherto not experienced.

ETHER VAPOR. NEW PROCESS. NEW INHALER.*

BY EDGAR PALMER, LA CROSSE, WIS.

The physiological effects of ether vapor cannot be determined in advance with any degree of precision, owing to the varied functional disturbances in the respiratory, circulatory and nervous systems, and to a sequence of such influences might be attributed causes for a better or less satisfactory exhibition of the practical workings of any method of administration. In other words, I realize the uncertainty of establishing at one clinic any claims I may make for my device, or my ability to prevent adverse criticism should it happen that our patient was not susceptible to the action of the vapor, however or by whom administered.

Illustrative experiments with valved inhalers date back many years, but so far as I am informed none of them were in any way satisfactory chiefly because they were so clumsy, complicated and unreliable that they soon gave way to the extemporized outfits with their modification of porous materials for holding the liquid. Some of our eminent authors, even now, go so far as to recommend "the simplest form" as "the best inhaler," which means a convenient rag of any kind which will absorb moisture and vaporize the drug.

It has been for many years my firm conviction that this careless way of producing anæsthesia was radically wrong—that any agent that is capable of suspending the most important functions of life should be used with greater caution or more intelligent effort to

*Read before the Wisconsin State Dental Society.

produce more uniform and satisfactory results with the least degree of risk.

That since there are no fixed laws for determining the manner in which such powerful agents will exert impressions upon nervous functions, there are certain well-defined characteristic effects produced which it is possible to control, not only insuring the prompt, safe and reliable action of the drug, but modifying, if not entirely eliminating the violence of local effects and reflex irritations during its different stages of action, and reducing to a minimum such complications and difficulties as confront every one who is familiar with anæsthetic procedure.

As a rule the majority of our profession are not well informed regarding the physiological effects of narcotic vapors, the changes, functional disturbances and subsidence, but it is not my purpose to dwell upon this, for such information as I might be able to give (which is not written in our text books) would be of little value except as all such information helps to outline the principles and theories which direct us by the application of such knowledge to the mechanism of an apparatus for general use possessing the most valuable features and the fewest disadvantages.

Dr. Snow has wisely remarked that "insensibility is not caused so much by giving a dose as performing a process." Every animate object draws from the same fountain of diluted oxygen to support its life.

If we can supply each patient with the same definite mixture of vapor and air we have imitated nature in so far as we have provided a uniform combination from which each person can draw his own proper dose to produce insensibility or narcotism, and as the chief toxic force of either is expended upon the respiration, when we have provided an inhaler which properly and reliably dilutes the vapor we have simplified the whole process and reduced the functional disturbances to the lowest degree and insured the safety and blessings of ether anæsthesia.

The next consideration of importance is to prevent the toxic properties of the exhalations from fastening themselves upon the vaporizing surface of the inhaler, producing a nonvolatile residue and an accumulation of poisonous gases and filth, which if re-inspired must certainly be sufficient to contaminate and obstruct the anæsthetic process if not set up more alarming potencies, and in this connection it may have seemed to others than myself that the

old practice is calling for some change which shall not make it necessary to besmear the face with grease or blister the skin and blind the eyes of the patient by having the liquid come in direct contact.

Last, but not least, is the application of well-known principles of meteorology, primarily to obtain the greatest volume of vapor when required by raising the temperature so as to increase the capacity of air to contain moisture and aid in vaporizing the liquid, but with equally positive results in preventing the lowering of temperature and consequent irritation of the highly sensitive mucous surfaces of the respiratory tract with all the concomitant annoyances. How far the inhaling apparatus shown you conforms to and fulfills these requirements, and in its simplicity and convenience commends itself for general use, I submit to your inspection and judgment.

IS IT NOT TRUE?*

BY DR. E. C. FRENCH, EAU CLAIRE, WIS.

It is not my intention in this short paper to present for your consideration any advanced thought upon any specialty in dentistry, or lay before you any prescribed rules or methods, an observance of which might or might not be of any practical use to any one in their every day practice. But rather to call a halt in these times of experimental practice, the tendency of which is to lead us to try new things, medicinal or mechanical, rather than rely upon those which have stood the test of years, and enabled many of you to build up a successful practice. In this age of scientific research and discovery, the tendency of the profession is to accept the statement of scientists, rather than to apply the light of reason and practical test. Every practitioner of any considerable number of years, who has endeavored to keep abreast of the times, has seen many of his pet operations prove a failure, much to his chagrin and the utter disgust of his patient, simply because he had listened to the fine spun theories of an enlarged brain too closely confined within the walls of an abnormal skull, instead of applying the law of mechanics, or knowing the nature of the remedies they use as the case may be. Too much praise cannot be given the microscopist or analytical chemist; the former has shown us the microbe, the latter how to destroy him.

Far be it from our intention to underrate the efforts of special-

*Read before the Wisconsin State Dental Society.

ists in the several departments of dental art and medicine, but rather to call attention to what is too often a mistake with specialists, that their specialty is not a panacea for every dental defect. The specialist who develops but the one idea, too often becomes a hobbyist and in his diagnosis too often overlooks the true facts in the case, and arrives at conclusions that fully warrant him in applying his specialty to the exclusion of other means more simple and effectual. In other words conditions and facts are made subservient to forms and methods.

Thus the bridge builder, anxious to show his skill in gold that glitters and fees that tickle, is always sure to find some pier long lost sight of by the patient, upon which the chasm may be safely spanned.

The general rule, and not the exception, with most bridge workers is, that bridges are adjusted wherever anchorage may be obtained, irrespective of the mechanical principles that are brought to bear in its practical use. We too frequently see bridges of three or more teeth adjusted to the superior lateral incisor, second or third molar, the lateral pressure (if corresponding teeth below are in place) is so great as to cause inflammatory action and subsequent absorption of the alveolar process, and finally the loss of the supporting teeth. Again, too frequently do we see the crowns of sound and healthy superior cuspids placed upon the sacrificial altar for the purpose of avoiding unsightly support for the lost intervening teeth. The practice of bridging the four superior incisors upon the cuspids is a questionable one and should be avoided save in exceptional cases. If the bridge could be made a removable one by swedging up a gold plate covering the ridge of the jaw and thus distribute the lateral pressure, which must be wholly upon the cuspids where the bridges are made nonremovable. We can see wherein bridges of this description would be less objectionable, but on the other hand would not a well adjusted gold plate in point of expense and durability be far more preferable in a very large majority of cases? We do not wish to proclaim ourself a watchman on the wall, or be numbered in the ranks with those who wholly condemn bridge work, but on the other hand we believe bridge work has come to stay and is an advance in the line of prosthetic dentistry, (*the ne plus ultra*) in special cases. But in all cases where the supporting teeth are required to do triple their normal work, the insertion of a bridge is decidedly questionable. The danger does not lay so much in the want of mechanical

skill to properly prepare the roots, adjust the crown and complete the work, as it does in the proper knowledge of the several parts and the relation they sustain to each other.

Another danger which may not be out of place to speak of is that the quack and charlatan find a new field in which they may prey upon an unsuspecting public, and continue the slaughter of teeth that otherwise might be made useful for a lifetime. Too frequently do we see a whole block in some of our larger and more enterprising cities and towns, covered with the following program: "Dr. Levy Moses, M. D. ? D. D. S., Dentist, branch office of the New York Crown and Bridge Company. Teeth extracted without pain by the use of a new and valuable discovery (vitalized air), teeth extracted and new ones inserted on bridges in the short space of fifteen minutes. Lost roots discovered, crowned and made useful for a lifetime. Impotency, sterility and catamenial trouble fully overcome by the use of our new and improved teeth without plates."

Along with these advanced theories of practice has grown an influence that may well challenge our thoughtful consideration. In these times of push and boomery, very much that was considered of vital importance to our fathers, the average dentist of to-day wholly ignores, and he who dares to refer to the dentist of fifty years ago, must do so at the risk of being called a mossback or a defamer of modern methods. To illustrate, instead of soft, white hands being engaged with a Beethoven sonata on a thousand dollar piano in the reception room, might be heard the music of precious metals being forged into forms of art and usefulness by hands made subservient to a trained and educated mind, in place of mere subterfuge, a little curtained corner, an obscure and darkened room, in which are hidden many unsuccessful attempts at prosthetic dentistry; a sort of sanctum sanctorum, or holy of holies, whose altar consists of a dry goods box, its golden candlestick a vulcanite file and scraper, might be found a large well lighted, well arranged laboratory in which was found the necessary implements and the master hand to construct what is known to a large per cent of the modern dentists, as a lost art. The needs of the profession to-day is not more dental schools, more theory, but more men of sound judgment and skillful fingers. For say what we may about our profession being a learned one, the future of teeth depends largely upon our ability to do.

THE PREPARATION AND FILLING OF A PROXIMAL CAVITY IN AN UPPER BICUSPID TOOTH, PULP NEARLY EXPOSED.*

BY W. J. PHILLIPS, D. D. S., ELGIN, ILL.

The above subject is chosen on account of the frequency with which we meet the condition, and the numerous cases we see which are improperly treated.

My treatment of the case is as follows: Dry the cavity, remove all debris and as much of the softened dentine as is consistent with safety.

Now the next and a very important step is to disinfect thoroughly the cavity, especially the deeper portion so that no infected dentine may be left near the pulp. This is done by placing in the bottom of the cavity a small pledget of cotton saturated with an essential oil, cinnamon, being the one used in my practice more than any other and sealing with gutta-percha or cotton saturated with a thick solution of sandarac. Now pack in the cavity and against adjoining tooth cotton only slightly moistened with sandarac varnish and by the time the patient returns the teeth will be nicely separated and without soreness or pain.

In four or five days place rubber drawn over the necessary teeth, remove the dressing, dry thoroughly, and trim enamel margins cutting the strong material labially, and lingually cut so that the margins of the cavity will be well removed from the line of near approach and contact with adjacent tooth, or to the proximo-labial and proximo-lingual angles.

Now take a piece of gutta-percha or Hill's stopping of thickness of heavy note paper, moisten one side with eucalyptol and lay with moistened side toward dentine, in that part of the cavity near the pulp; mix and place immediately over this a layer of oxyphosphate of zinc of a considerable amount.

If a quick setting cement is used it will not be necessary or even desirable to postpone the filling of the cavity until a future sitting, but while the cement is setting cut out the fissure sufficiently to insure when filled an easily cleansed surface and shape so that this groove when filled in connection with the main cavity will add to strength and retention of the filling. Make the necessary undercuts and by this time the cement is hardened so that you may proceed to fill.

*Read before the Northern Illinois Dental Society.

What shall we select as a filling material?

There is only one that can be relied upon, viz: gold.

What form of gold?

The cervical margin and angles of the cavity should without question be covered with some form of non-cohesive gold, so it is best to fill one-third or more of the cavity with the non-cohesive gold, after which the rest should be filled with cohesive gold, contouring so that contact will be had with adjoining tooth at a point usually about two-thirds the length of the crown toward the grinding surface and two-thirds the distance toward the buccal surface of the teeth.

A great deal, of course, depends on the filling being finished smooth, and even with the margins of the cavity.

The careful use of discs, strips, stones and burs may well be supplemented at the cervical margin, where it is so necessary to use extreme care in getting the proper finish and avoid lacerating the gums, by a file cut instrument used with a drawing stroke.

COUNTER IRRITANTS.

By A. W. HARLAN, M. D., D. D. S., CHICAGO, ILL.

Counter irritation is an accepted fact in dental medicine as well as in general medicine, and he who would obtain the best results in this form of medication must of necessity understand the general principles on which this practice is based. The general object of course is to direct the blood supply from the irritated and deeper part. No little skill in diagnosis is required to say when counter irritation will prove most useful, and a general knowledge of inflammation serves best to teach the methods of this system of medication. Counter irritants are agents prescribed by physicians and dentists as revulsives to drive away pain from a diseased part, and localize it at the point where irritation is produced. Counter irritation has been practiced for centuries, in households and by physicians. The general practice has been to deprive the part affected by disease of the surplus blood drawn to the part by the inflammatory process, and send it to a new point of irritation.

The purely physiological process of the swelling of the great toe in gout is an example of one of nature's methods of relieving indigestion, thereby withdrawing the blood from the gastric region

to the toe or toes. A form of internal counter irritation familiar to all is the administration of drastic cathartics or purges to relieve an overloaded stomach, or to draw from the overcrowded brain, blood which threatens to produce an apoplectic seizure. Counter irritation, however, in the sense in which it is to be produced by the dental practitioner, goes no farther than the lessening of blood pressure in facial neuralgia, or in relieving irritation of some form of peridental inflammation, or at most those painful affections of the glandular system adjacent to the mouth or the articular relations of the inferior maxillary. Occasionally there may be painful affections of the muscles of the temporal or masseter c region, which if not to be relieved by counter irritants at least will call for rubefacients.

Definition. A rubefacient is an agent which in its proper use does not produce vesication, being limited to the production of redness, burning and stimulation. A vesicant or counter irritant is an agent which will produce a blister, and at the same time act so energetically that the arterioles are enlarged to an extent which will cause the weeping out of serum and the lifting of epidermis, producing anæmia of the deeper inflamed parts and a partial anæsthesia of the sensory filaments to a degree which permits of re-establishment of normal equilibrium. Too little attention has been paid to the art of counter irritation in dental medicine and it is our object to stimulate a new interest in this phase of practice.

For the relief of pain, counter irritation may act by removing or modifying the standard condition on which the reflected suffering depends. The end organs of the sensory nerve may be modified in molecular arrangement, or the trunks of the nerves themselves or the nuclei or the nervous centers may be altered in some unexplained way by the stimulus applied to the seat of pain. Counter-irritation may act by altering or redistributing blood supply, as by actually emptying the deeper vessels and filling the more superficial arterioles at their expense, or special function or nutrition may be profoundly affected by influencing the trophic or other nerves which more specially preside over these departments of the human economy. (Farquharson).

Dermal irritants have a direct tendency to arouse or excite the system, and may be used as general stimulants.

It is the nervous and arterial systems alone which are acted upon or feel the influence of counter irritants. They are never to

be used in cases of exhaustion. Depression, or collapse, or shock are proper conditions for the prescribing of counter irritation. Contra—indications to the use of blisters are high arterial tension or a febrile condition.

When vesication is extensive the administration of diluents is indicated in order to protect the kidneys.

The production of a series of blisters reduces the general blood pressure, and also causes the expulsion of morbid products on which inflammation depends.

Counter irritation produces a tetanic state of the vasomotor system, and should not be too long applied or a general paresis will result and cause loss of irritability of nerve fibre, with results more baneful than the original disease.

In a peridental inflammation from too early filling of the root or changes which this membrane undergoes from an acute attack of the so-called Riggs disease prompt relief is derived. Scarification or leeching will not furnish this and counter irritation is called for. This may be accomplished by the use of a heated steel disc, a disc about the size of a nickel, dipped in boiling water and applied to the surface of the gum for less than half a minute will generally relieve these cases. In the first stage of peridental inflammation due to pyorrhœa alveolaris we may relieve by using the following refrigerant :

R	Plumbi acatatis	-	-	-	3ss.
	Tinct. opii.	-	-	-	3ss.
	Water	-	-	-	3vi.

M

This is to be applied with cotton. The gum should be dried and a mat of sufficient size wet with the fluid is placed upon it and allowed to remain for half an hour. When a blister is quickly needed stronger ammonia may be used as follows : A pellet of cotton the size of a pea or a little larger is wet with the ammonia, placed on the gum and a copper or lead disk placed over it to keep the ammonia in contact with the gum. Allow it to remain one-half minute, then remove and in a few moments the blister may be punctured. Wine of opium may be used to counteract this pain if it proves too severe. Absolute alcohol and chloroform or ether may be used in the same manner. The tincture of cantharides can also be limited in this way, or cantharidal collodion,

croton oil or oil of mustard. The generally used revulsive compound of equal parts of tincture iodine, aconite and chloroform is not a true counter irritant although the general effect is likened to that of counter irritation.

In this combination it is true that the corneous layer is lifted by the serous exudate which is limited by the rapid absorption of the aconite and iodine, while the chloroform is the true vesicant. The general practice of counter irritation and the theory, is based on the idea that irritation or inflammation shall terminate in resolution which cannot be if more than an infinitesimal quantity of pus be present. After the formation of pus common sense and a proper regard for the welfare of the patient means that evacuation, not counter irritation should be the practice. Much of the object of true counter irritation is lost by improper application and combinations of easily absorbed medicines which should always be the adjunct instead of the concomitant medication. After the production of the blister anodynes are to be used as tinct. benzoin comp. cocaine in liquid vaseline, iodoform bituminized and worked up in lanolin—the aforementioned lead water and opium or black drop—vinum opii, cannabis indica, belladonna ointment made with lanolin, chloral-camphor in lanolin. The injection of chloroform two to four minims. The local application of tinct. gelsemium or veratrine—a continuous stream of hot water or the application of mucilaginous protectives or the painting with flexile collodion.

DENTAL SCIENCE IN THE UNITED STATES.*

LOUIS OTTOFY, D. D. S., CHICAGO, U. S. A.

It is my desire to treat briefly of those matters in relation to our profession, which are especially concerned in, and affected by, the action of a cosmopolitan body, such as the International Dental Congress.

Within recent years much has been done by the profession of the United States to elevate the former to a higher plane, to raise dentistry to a position where it may be honored and respected. It is unquestioned that to a great extent this has been accomplished. The profession of the orient does not accord that position to the dentists of the occident which they deserve. In a marked degree, this is no doubt due to the educational system of the United States

*Read before the First International Dental Congress.

and its defects and errors of the past. Those who visited our shores two years ago, and who embraced the opportunity to examine into our school system, have done much to remove the erroneous impressions previously held by many of the most worthy men of the profession in Europe. However, there is no question but that the dental educational system of the United States, though by far better than in the past, is not what it should be and what it can be.

It appears to me that the International Dental Congress is a body which has the prestige, the power and the influence to equalize the education of dentists throughout the world. What immeasurable freedom, unity and conservatism would be embodied in a document which would entitle the holder to practice his profession in any part of the world? The first important step consists in securing a uniformity in the methods of teaching, the length of time the student should devote to the study of dentistry, and the qualifications entitling him to practice, in every country where schools are established. Presuming that the student of Chicago, of Paris, or of London has each passed similar preliminary examinations, received the same character of instruction, devoted the same length of time to his studies, and passed the same kind of final examinations, it would not be unjust to presume that they would be equally well qualified to practice. At present Austria requires the degree of Doctor of Medicine, while in a limited portion of the United States, and in some countries, no qualifications whatsoever are required; between these two extremes, the requirements to entitle persons to practice dentistry, assume all degrees.

I believe that one of the subjects of paramount importance, and one which can only be treated in a manner befitting its importance, is that of Dental Education, and I trust that this or some future International Dental Congress may see fit to take steps to secure uniformity of education, qualifications and requirements in all parts of the world.

Another matter which can be most suitably treated by an international body is that of the examination and tabulation of the condition of prehistoric crania of all races, located in all parts of the world, in order to determine the extent of lesions, anomalies, caries, etc., to which the teeth of various races have been subject in the history of the world. Science should be constituted of a collection of truths, and truths have their most reliable foundation in statistical,

de facto, demonstrations. No controversies or arguments, be they ever so learned, discussing the existence or extent of decay, can have the force and power to convince, which a table showing the condition and age of the crania now extant, would exert.

In the United States a movement of this character is now on foot; about 6,000 crania of prehistoric times are now in the various collections in the United States. The museums of London, Paris, Berlin, Vienna and St. Petersburg alone contain a much greater number of crania. We cannot overestimate the historical value of the scientific tabulation of these crania. The accomplishment of this work on part of the International Dental Congress, would at once place the latter in the ranks of the foremost scientific organizations of the world, and its volumes necessarily would rank in value as high as the publications of other scientific bodies. I trust that the International Dental Congress may take some action leading toward the consummation of these proposed investigations.

A matter of importance, Mr. President, to which I desire now to call the attention of the members of the Congress, is that of the systematic examination of the teeth of the present living races inhabiting the world. The unrefuted errors circulated by dentists, who are well read and well educated, and which have now become maxims among the laity, are enough to fill volumes of considerable dimensions. In the United States dentists are fond of referring to the good teeth of Europeans; by some the Germans are said to have splendid teeth, while others quite as positively aver that the teeth of the Scandinavian race have less blemishes than those of any other race; there are portions of England (it is said) where decay is rare, in some section indeed (we are told) almost unknown. The Hungarians have good teeth—it is said, in the United States. Russians, the dentists of the United States say, have good teeth; while the Russian dentists are of quite a different opinion. No amount of argument will be as serviceable as a presentation of facts and statistics in proof of this matter. I am inclined to the belief that the examination of the teeth of 500 persons embracing all stages of life, age and sex, from the peasant to the man of leisure and wealth, in each province, and of each race, in each country, would quite readily decide the matter.

It is within the province of the International Dental Congress to devise means whereby this work may be accomplished; an ultimate solution of the principal causes leading to caries is sought,

and a correct understanding of the extent and prevalence of the disease, are essential to its full comprehension. The importance of this subject is sufficiently apparent when I simply mention the fact that in nearly all countries, the United States, France, England and Germany, some phase of this subject has been practically treated; though nowhere have examinations been made of sufficient extent and depth of research to be of value in any other way, than as mere curiosity. We find in the United States some who devote much time to this matter, none however who have made any extensive investigation.

Lastly, I wish to call your attention to one other subject, which ought to receive consideration by the congress. It is that perplexingly intricate and important subject of dental terminology and nomenclature. Satisfactory results can be obtained only by a body having representatives from the various civilized countries wherein dentistry is practiced. The erroneous impressions, terms and names, now being annually added to our list of dental terms, is alarmingly large and appallingly bad. Many of the names are wanting in scientific accuracy and in universal adaptability or general application. As a result, distinct understanding of the meaning of different scientific men is out of the question. It is my opinion that the Latin and Greek, principally the former, ought to be retained as the official language of disease; its present application in medicine, and in fact in all of the sciences, especially the natural sciences, is satisfactory and universal. In addition to the want of a proper terminology, abbreviated universal systems of notation should be devised and introduced. Germain, too, and within the province of this subject we are justified in including that of a system of description, anatomical, pathological, etc., as relating to the science of dentistry.

I am of the opinion that the appointment of permanent committees, comprised of members of the National Associations of the countries represented in the congress, whose duty it shall be to consider the matter, would be highly proper, these committees should meet in their respective countries from time to time, they should be empowered to fill vacancies within themselves, to continue their labors and report triennially to the International Dental Congress.

STORAGE BATTERIES.*

BY H. A. ALLEN, MECHANICAL AND ELECTRICAL ENGINEER.

It is not in the province of this paper to give an historical account of the storage battery; nor even an account of the chemical changes that are supposed to take place during the various stages of its use. From time to time many complete works have been written from which all historical and known chemical data of the storage battery may be obtained. It is therefore my aim to explain briefly what is meant by a storage battery, and to show some of its advantages and disadvantages for medical and dental work.

The simplest form of storage battery consists of two lead plates placed parallel to each other in a jar containing dilute sulphuric acid. If now, a current of electricity from some electric generator be passed from one of the plates, through the medium of the water to the second plate, and thence back to the generator, it will be found that the combination of lead plates and acidulated water possesses a property not before noticeable. On connecting the lead plates to an instrument used for determining the flow, and amount of flow of an electric current, it will be found that a current of electricity is given out by the plates in a reverse direction to the current from the electric generator. In other words, our plates have changed their state and now act as a source or generator of electricity. Thus we see that the kinetic energy of the generator current has done a certain amount of electro-chemical work upon our plates, and given to them a potential energy that remains stored up until, by completing the external circuit from plate to plate, we destroy the equilibrium and obtain a consequent flow of current, and in a direction necessarily opposite to that of the original source.

We now understand what is meant by secondary batteries, accumulators, or storage batteries.

The combination of the lead plates, acidulated water (electrolyte), and enclosing vessel is generally known as a cell. The combining of two or more cells forms what is usually known as a battery, although the term battery is often applied to a single cell. The amount of energy that can be stored up in a single cell depends (other things being equal) upon the extent of surface of the plates. The electromotive force, or electric pressure of a single cell, is for all practical purposes two volts, a fact often overlooked

*Read before the Northern Illinois Dental Society.

even by expert electricians. It is absolutely necessary to have sufficient electric pressure in order to force the necessary amount of current through the apparatus used.

In other words, if it is required to have an electro-motive force of six volts, as one cell gives but two volts, it will take three cells to give the required pressure, no matter what the ampere hour capacity of the cells may be. In the market there are many forms of storage batteries, each one claiming to be the best. It is therefore necessary, in order to get a good battery to have some idea of what qualities a good battery should possess. The following are points to be noticed in selecting a storage battery:

Efficiency, in regard to capacity in ampere hours in proportion to size and weight. Convenience, in regard to charging, and to transporting. Durability, in regard to liability to injury from over-charge or discharge, and in accidental rough handling. Cost, after having examined into efficiency, convenience, and durability. Having decided upon obtaining a storage battery, you must now decide how you will charge it, that is, put work into it. If you have electric light in your office it will be no trouble to obtain your charging current. It is here that a great advantage for the storage battery lies. It may be that you have only a night circuit in your office. If so, the storage battery can be charged through the night, or at such other times as the electric light current is on. It may be that there is no electric light in your office, but there is an electric light station in the city where you live, a quarter of a dollar will probably pay the station man for the trouble of charging the battery for you, expressage not considered. In this case it will pay you to have three or four large cells, as then you will not be obliged to charge so often. If no electric plant is near you then you may resort to primary batteries to charge the storage cells. There are several very neat arrangements for charging storage batteries by this method which has an advantage for simplicity, convenience and cost. One of the neatest means of charging a battery of one, two or three cells is by means of a thermo-pile, a method at present but little used, owing to its apparent expensive first cost. In purchasing a battery all directions for use will be given; and owing to certain advantages, that I shall show later on, no matter by what method you charge, the storage battery is a great convenience for the doctor and dentist.

One cell in a battery is sufficient for lamps used in instruments

for examination of throat and eyes. For electric cautery, two cells are generally sufficient for ordinary sized loops. Electricity has lately come boldly to the front as a great surgical and medical agent. For dissolving ulcers, destroying the nerves of the teeth, curing toothache, electricity is without a rival. For extracting steel or iron from the eye, examinations for translucency in cystic tumors, for faradization, electrolysis, galvanocautery, a two-cell storage battery is sufficient. The great advantage that the storage cell has for this kind of work is its great constancy in electro-motive force. If not over discharge the storage cell gives practically a constant electro-motive force of two volts.

For convenience in carrying, small two cell batteries are made ; but for office work, for running motor for dental engine, etc., it will be more economical in the end to have two or three large cells. The time allotted me for this paper has but permitted me to skim over this subject, which is really a very extended one.

There is soon to be put on the market a much improved battery which is especially adapted for medical and dental work. But, at present there are two or three makes of storage batteries that will give good results in practice.

The price of single storage cells ranges from \$7 to \$30, for ampere hour capacities from twenty-five to five hundred hours.

Extra cost amounting to a dollar or so is charged for furnishing boxes. It is necessary in order to obtain good results for all around work to have a rheostat connected with the cells. This allows you to vary the amount of current taken from the cells. The price of rheostats vary from about \$6 upward. A $\frac{1}{8}$ horse power motor will cost about \$30. It will take two, 240 ampere-hour cells to properly run a $\frac{1}{8}$ horse power motor, which will cost about \$35.

Rheostats for regulating current, about \$8. This makes a total of about \$73. This is of course only approximate as certain per cents are usually allowed off.

The advantage of the storage battery system over the steam or gas engine for small work is very great. As the current is steady it has an advantage for cautery purposes over systems taking the currents from larger plants. It is difficult to state the price of any desired apparatus, unless one knows what is actually required. Low priced apparatus, as a rule, do not give good results after the first few weeks of their use. The time is coming when the storage battery will be in almost universal use ; but at present, owing to its

weight, it is not used extensively, except for stationery work and numerous forms of medical batteries. Lately it is beginning to gain favor for traction work. For running a dental engine and other dental appliances, the storage battery is one of the most convenient arrangements from which to obtain the power. As every one does not understand the requirements and the workings of electrical apparatus it is generally best to consult an expert, as often much expense may be thus saved.

The writer will be pleased to be consulted in regard to the making of any special form of apparatus as well as in regard to the value of any present apparatus.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

Regular meeting October 6, 1891, President, Dr. D. M. Cattell, in the chair.

Dr. Geo. J. Dennis read a paper entitled "Inter-Dental Spaces," which elicited the following discussion :

DR. EDMUND NOYES. Mr. President, I cannot make as interesting and wide-awake speech as this subject deserves. It is one of the most important that can command the attention of the society of dentists, and although it seems to be a comparatively simple one with the elements plain and the conclusions definite and unavoidable, yet the application of it in practice involves so much painstaking that in looking at the mouths of people who visit us we find an astonishing number of instances in which these considerations which have been set forth in the paper have been overlooked or neglected. The subject is really as old as the paper intimated, dating from the introduction of cohesive gold and the mallet and the possibility of restoring tooth forms. It is very well indeed that the discussion of it has changed around in this way, to consider in addition to the forms of the teeth the spaces between them, for that is certainly a part of the subject, as important as the other and probably much more so ; that is to say, the comfort of mastication, the preservation of the teeth from decay, the preservation of the periodontal membrane in health ; and so the prevention of absorption and the occurrence of pyorrhœa alveolaris are related to this

part of the question, and are of much more consequence in the aggregate than the question as to whether a man shall have a little more or less grinding surface to use on a bicuspid or a molar. It is not always of very much consequence, whether the food must be chewed with two-thirds of the grinding surface of the original tooth or with the whole three-thirds, but these other matters are of the greatest importance.

The question of carrying out this policy—the preservation of the interdental spaces by the restoration of contour—will perhaps need to have some modification in certain cases on account of the amount of destruction which has already taken place and the consequent weakness of the walls which must retain the operations. I think that this will not prove nearly so important a factor as it has often been made in the discussions of the subject; that is to say, I think there are few cases comparatively, that have strength enough left to retain flat fillings permanently that cannot be so prepared as to retain fillings which shall be shaped in a way to preserve the interdental spaces by the proximal contact of the two operations in the adjoining teeth. If the walls are not strong enough to stand the force of full mastication the fillings may be still made in many instances mesially and distally so as to preserve the space above them and still not bring any more force of mastication upon the teeth than would be brought upon them if flat fillings were made; so that the question of strength may be made nearly the same as it would be for flat fillings.

The success of operations for this purpose, the restoration of contours and the preservation of interdental spaces, depends far more upon the perfection of the operation in detail than is the case with flat fillings, or is the case with grinding surface fillings, or a great many other operations which we have to make. It is indispensably necessary that the shapes of the teeth should be made with care.

What the essayist has said in regard to cutting and trimming with discs so as to leave flat surfaces is important indeed. Tooth forms are not flat to any great extent; they are full of curves. There is in the surface of well formed natural teeth a very limited amount of surface that can be touched with anything flat; the lines do not run straight in any direction, and in order to restore them properly we must use instruments in detail that can be handled with accuracy, and with watchfulness and great care, and the fin-

ishing of cervical borders must be perfect and careful. If this border is left overhanging, rough in any way, it will serve as an irritant to the gum tissue which will destroy in great degree the advantages of the operation. This is so plain that there would be no need of saying anything about it if it were not so difficult to accomplish, and if we did not see so many instances in which it has not been accomplished.

DR. C. F. HARTT. I have had the pleasure of examining some of Dr. Dennis' work, and his fillings give ample evidence of the sincerity of the remarks he has made here this evening. The sand paper disc is certainly an instrument with which a great deal of harm can be done, but is equally capable of much good service in skillful hands. I am of the opinion that its use should be cultivated rather than shunned.

My method of using the disc in contour work is to select one of proper size, having oiled it well, I pass it up between the teeth, at the same time bending down the outer edge of the disc with the finger or some blunt-pointed instrument, the result is that the disc cuts almost entirely upon the edge of the filling and neck of the tooth, leaving the contour nearly intact.

Where we are unable to contour as much as we should wish on account of the frailty of the tooth, it may frequently be found of advantage to trim down the necks of the teeth, *polishing well* afterward, thereby preventing them from coming in contact.

Very beautiful contour fillings can be made by using a thin steel or tin matrix held in position by pressing modeling compound while soft, into the interdental space, and if the teeth are at all loose it may be pressed around upon their sides, thereby holding them very firmly in position, and considerably reducing the pain caused by malleting upon such teeth; the compound can be removed by using a hot air syringe.

DR. T. W. BROPHY. I am glad the paper has been read, because it is a practical one. I like to see papers presented to our society that have an influence upon our practice. Theoretical papers are well enough now and then, but we do not need many of them.

In the finishing of proximal fillings I think a disc may be made a very serviceable appliance, provided a disc of proper size be chosen and properly used. It is not proper, in my opinion, to make use of a large sand paper disc for the finishing of contour

fillings, as the contour may thus be destroyed. If we have a disc of the proper size, the smallest size made, known as the minim disc, and have it oiled, as Dr. Hartt has said, which is a matter of great consequence, we can accomplish a great deal with it, besides it is far more agreeable to the patient.

In this connection I will say that a finishing bur should be always oiled before using it upon a filling, either oiled or soaped so that it will cut better. It is a procedure that will be economy to the dentist that uses it. His bur will last longer, and he can finish the filling beautifully. A man who is working metals never attempts to cut a metal with a drill when it is dry. His drill must be oiled. It cuts better, but the principal reason is to save his instruments. If you take minim discs you can carry them around on both sides of a tooth and finish off the proximal surfaces beautifully. You ought to have three or four dozen small discs ready for use, that is, for finishing off the masticating corners and to see that the surfaces do not overlap. If the disc is used as it ought to be you can get a better surface; you can use strips which also should be oiled.

DR. C. N. JOHNSON. I want to add my testimony to those who have spoken in commendation of the paper. It is certainly an excellent one, and the subject is very important.

In nearly all of the literature of this subject there are considerations that have been overlooked, and it was to these particular phases that I had called attention in the paper I prepared for this meeting and to which Dr. Ottofy has alluded. The question is in regard to the forms of the teeth. Ever since I began to study dentistry we have been taught the theory that we must follow the form nature gives to the teeth in contouring fillings. That is often a mistaken idea. Nature does not always form the teeth to the best advantage. The reason I was anxious to read my paper was that I expected to be criticised on account of that statement, but I reiterate it here, that nature does not always give the teeth the best form. Nature seldom gives a perfect form to any of her productions. If there is any one thing more than another that nature errs in it is this matter of form, and she errs in the form that she gives the human teeth just as much as in other forms. We should contour teeth for the benefit of the patient and without any idea as to the original form of a tooth. We must study the case individually to see what is the best form to give the tooth under treatment. In

some instances it is not the best practice to reproduce the natural form even if it were the best originally. The presence of a cavity may modify the conditions. When nature formed a tooth she gave it a continuity of structure to protect the crown. A tooth in that condition will stand more strain than one in which the continuity has been broken. The moment a tooth is decayed it is weaker, and the walls will not stand the same force of mastication, so that we may not always build it out to its original shape with safety. But I wish to add my plea to that of the others for the preservation of interdental spaces. This is a question that cannot be emphasized too much. We must keep in mind two things—to preserve the interproximate space and to protect our fillings from failure.

Dr. Noyes mentioned a point of interest, which I will try to illustrate on the board. Suppose we have here the masticating surface of a broad molar with proximate contact at this point. Now, if the cusp of an opposing tooth strikes the fillings squarely, near the proximate edge, it would be folly to build up the original form of that masticating surface and expect a filling to last. We may build the filling out at some one point to gain contact and preserve the interproximate space, but as a matter of safety we must bevel the filling back from this point and round it off so that the cusp of the opposing tooth will come laterally against it and force the filling in place rather than tear it away in the process of mastication.

DR. NOYES. What Dr. Johnson has just said is important, although I am tempted to object to it in a slight degree and state it in a little different way. I do not think it is true that we can ignore the original forms of the teeth as he has suggested when we operate upon them. It is true that nature often fails of the ideal tooth form just as she fails of ideal forms in everything else. Take a bushel of wheat, go through it, and you won't find the ideal kernels of wheat in form. The same is true of teeth. We may with perfect propriety and with the greatest advantage consider the individual teeth we are to operate upon with reference to their original form as related to the ideal or perfect form with a view to see how far that original form admits of being modified toward an ideal form. That means exactly the same thing that Dr. Johnson has said. The only object I had in rising was to give it a different expression and to bring it before our minds a second time, because it is one of the most important things that has been said this evening.

DR. E. M. S. FERNANDEZ. This is a subject that has been

brought up a great many times. It is an old thing. There is one point that surprises me, and that is so many of the older members who have had considerable experience in this work confine themselves to the preparation of the cavity and to filling it and never say anything about the instruments they use. You take any mechanical work, and if there is any portion of that work of interest, it is the instruments that you do it with. We have heard a good deal about the matrix. There is a good deal about the matrix you use for this kind of work. In the case mentioned by Dr. Johnson, and which you have seen illustrated on the board, I do not exactly agree with him. He has a tooth drawn there, and in from one to two years in my experience that tooth will meet in here (illustrating). I find in the antagonizing teeth you have to put counter pressure to the cuspid, and if I cannot do that I grind the side off if I have to put a filling on that. I think each and every case has to be taken separately and studied well. Next comes the preparing of the cavity, anchorage of the filling, the kind of matrix to be used in the case, and the most important of all is the instruments you use for it.

We will suppose that here we have the second bicuspid, the first upper bicuspid and cuspid. Supposing the posterior surface of the first bicuspid were decayed, we find the teeth will move together, and we find this portion of the second bicuspid will be worked into the cavity. That is the first objection we find in my experience. I find it to be the case every time; therefore we find wedging necessary, either slow or rapid. We will suppose that here is a case where there has been little or no movement on the tooth and it is decayed about this much, and perhaps the dental cavity is away down here (illustrating), in a case like that if the antagonism is very mean there this tooth is worked and worn out; I grind it off first in the way you see. If the filling were built out here it would break off entirely. If it is not too painful I grind the cusp off like that. Here we have a top view of it. There is one bicuspid here and another there where the tooth has yielded somewhat and worked out I do not save the margin of the cavity, I take it out with a wheel. I am going to build with gold, I can do that easier than I can fill in that corner which you see. With regard to matrices, I use a triangular piece of steel, letting one matrix go over with the filling on top of it and take it out by the side. I cut my cusps off because I am going to build them of gold. After hav-

ing filled this up to about there (illustrating), I begin to work my filling up between the cusps. I take a small piece of gold wire and bend it and place it in here so that this point goes in there and a strong bar comes over; then I finish my filling. This is one of my methods, and experience has taught me that it is very practical in these cases.

DR. D. M. CATTELL. My first intelligent experience with the interdental space was with bridging across from one tooth to the next in order to protect the lacerated tissue, where previous separations had been accomplished by grinding, leaving space for food to be wedged down by the occluding or opposing cusp. My first experience in that line was in drilling holes in the fillings inserted in the proximal surfaces, anchoring there and building a bridge across with amalgam, allowing that to remain long enough to determine whether the gum would heal up and become comfortable again to the patient. In due time the space was filled in again with healthy tissue, and the operation of contouring was accomplished with satisfactory results. I remember reading an article in one of our journals several years ago from the pen, I think, of Dr. Bonwill, where he advocated the wedging of teeth with gutta-percha. In the wedging of bicuspid and molars, breaking down the overhanging walls, crowding the gutta-percha between the teeth and allowing it to remain for one or three weeks or three months as the case required. In my limited experience, I have reason to thank the author of that paper and to say that the slow process of wedging and the lack of soreness to the teeth and adjacent parts at the time of the final operation of contouring has been so beneficial to both patient and myself, that I like to take from one to three months to separate. Of course, it is understood that while the gutta-percha is packed in the approximal cavities and intervening space there is no decay going on, and at the same time it is a perfect cover and protection to the interdental space. I would like to criticise Dr. Fernandez in his expression that "The instruments are the important features in accomplishing fine results." I must take exception to this thought for we know that men with only a jack knife can make beautiful pieces of art, carve neat, pretty fans, ships, houses, anything they have a mind to. I do not think the instrument so important as the hand that yields it.

DR. FERNANDEZ. When Dr. Cattell speaks of instruments he will have to understand what I mean by it. I do not blame him

for what he says, that a very fine piece of work can be done with a poor tool; but if you get a fine tool you can make a finer piece of work. In almost every case we have a complex surface to deal with. We take a straight instrument with serrations right up here (illustrating); I never approve of that kind of instrument for gold fillings. Our instruments according to my ideas should be concave or convex in this kind of work. Supposing I should use only a square end instrument, I could not possibly do a nice piece of work of this kind with such an instrument. For this kind of work I use instruments of this shape (illustrating). Here is the tip of the instrument, and this would be the flat end surface. Enlarged it would be somewhat of that shape, the one part raised higher than the surrounding oval or convex surface and serrations on that. Take such a surface as you see, slightly bent, you can pack gold against the matrix right flat and have it close back to the tooth and get the gold just as tight as the matrix is. I find the gold is packed as can be. A square instrument accomplishes the whole thing. The sharp corners come right against it. A very skillful man may do a nice piece of work with a poor instrument, but if you give him a good instrument he does much better.

DR. BROPHY. I would like to ask the President a question. Some of us understand that he has advocated the use of gutta-percha, for the reason that it may remain between the teeth two, three or even six months, as the case may be, in view of separating them. Do we understand that these teeth are separated beyond the point where they are to remain, or only in the cases cited by Dr. Fernandez or Dr. Johnson where the tooth lapses into the cavity of another tooth. Do we understand that we are to separate teeth three months and then expect them to return to their natural position without injury to the tissues surrounding them, or do we force them into the position in which they are to remain? It seems to me that if we keep teeth abnormally apart for three months we are likely to create a great deal of mischief.

DR. CATTELL. The paper I have referred to advocated that, and experience, so far as I have been able to determine, would bear it out, that you may separate them beyond the position that you expect them finally to occupy, and the separation made, even if they were filled with amalgam, would allow the hardening of the amalgam and the finishing of the filling before the tooth would likely drop back into its proper place. Again, you who have had

experience in regulating teeth know how easily you may put malposed teeth in the positions you want them, but if you do not hold them there six, twelve or even eighteen months, how readily they will drop back to the place they originally occupied. The expression I used was from one to three weeks, or three months. Three months' time between the first and second molar will oftentimes separate them but very slightly, and yet that slight separation gives you a chance to contour and finish your fillings before the teeth will drop to their natural places. Unless held apart much longer than three months they will soon get back to their original position and become firm and solid again—at least, that is my experience.

DR. BROPHY. If I am permitted to follow up what I have said, I will say that it is objectionable to maintain the separation of teeth so long. The question naturally arises. What is the effect upon the alveolar process when we force the teeth apart to the extent necessary and keep them apart so long? There must be absorption. We establish an irritation of the pericementum which may lead in many cases to serious consequences. Take a patient, for instance, with a scrofulous or syphilitic diathesis, and we may establish an inflammation which may lead to extensive periostitis, and possibly to necrosis of the bone.

I have not the desire to enter further into this discussion, but I would sound a note of warning with regard to these protracted separations. They should not, in my opinion, be practiced; in other words, we can secure all the space we want in a week or ten days to enable us to fill any cavity. In some cases immediate separation is most desirable. The sooner we get the cavity filled the sooner we allow the tooth to assume its natural condition.

DR. P. J. KESTER. The question which suggests itself to my mind is, that I do not see the particular object in taking any such time to separate teeth. The objections that have been mentioned are good ones. I do not presume from my own experience that a tooth may be moved back beyond the proper articulating point. You have to move a tooth considerable, whereas to move them beyond the articulating points you change the articulation, and it seems to me that it is useless to wedge teeth for any such length of time as three months unless the person was taking a vacation. I would not care to do it then. If you fill them up with gutta-percha for two or three months you will find the necessary space.

Dr. Harlan has suggested that as a means of separation. I do not believe Dr. Cattell means that as a universal plan of separation.

DR. HARTT. I would like to ask Dr. Brophy a question. Would not the age of the patient form an important factor in a case of this kind?

DR. BROPHY. An elderly person's teeth separate less kindly than a young person's. The bone is more dense, there is an excess of calcium salts present and less organic matter than in the young and middle aged, therefore is attended with greater difficulty and more risk. It is hazardous sometimes to separate such teeth. I have seen teeth that I would not attempt to separate. Any irritation might lead to a good deal of inflammation and trouble. We must consider these things. I fail to see the necessity of taking three months to separate teeth. I like to get them separated and filled as soon as possible.

DR. R. B. TULLER. I want to say a word in regard to finishing proximal surfaces at the cervical margin.

I find in finishing them when having the cavities one-fourth or one-third filled, that with any suitable disc or strips, I can work with a great deal of freedom, and without injuring the teeth in other respects because I can see what I am doing. Afterward I continue my filling and finish and then if there is a projection or roughness at any point, left by oversight or error, it would be when the gold comes together and away from the cervical border. I think this is not a new idea; I learned it from some one, however, not long ago.

It has given me a great deal of satisfaction, especially in making contour fillings between bicuspid, I am enabled to finish the remainder of the filling a great deal easier after the cervical margin is finished. In this method the operator must not use oil or any other substance to destroy the cohesion of the gold.

DR. GEO. J. DENNIS, in closing the discussion, said: I have not very much more to say with reference to this subject. It is one that has greatly interested me ever since I began to study it. While I may have gone to the extreme in regard to it, I have been benefited by some work done on my own teeth. I suffered for about five years for want of interdental spaces between the two bicuspid and first or second bicuspid and first molars on each side. I was constantly having trouble. This summer I had the fillings taken out, although I knew there was no decay there. The

buccal and lingual borders were cut away, so that there could not be any possible contact with enamel margins. Wedging was resorted to, the fillings nicely contoured and a space about the tenth of an inch left between the necks of the teeth. Since that time my mouth has been very comfortable.

In regard to the strength required to hold fillings that are contours, that point was brought up by Dr. Noyes and discussed more fully by Dr. Johnson. The filling is beveled toward the adjoining tooth. The point of strain was mentioned by Dr. Johnson, and pressure is usually brought in such a line as this (illustrating), if you have the cusp of a tooth as here illustrated. If care is taken in regard to the articulation; if the line of force is brought to set against it in the manner shown, you have the filling retained more firmly than before, and that can be done in nearly every case, and mastication will not force the teeth apart.

There is another thing in regard to this subject, that is after the interdental spaces are fully restored, unless cervical borders are perfect in every way, the work is not good and the end sought is not attained. There are a class of teeth that are faulty in construction. These are peculiar forms of teeth in which the neck portion of the tooth is almost as large as the crown. This permits a very limited interdental space. In such cases the teeth and gums and the whole mechanism of the jaw are in a poor condition; that is to say, the points of the gingival cushion instead of being arched in form have been destroyed, and the elasticity likewise. You find the gums partially painful and irritated. I had a patient in my office to-day in this condition, and it seemed to me that I could do very little to overcome the pain and irritation which existed.

AMERICAN DENTAL ASSOCIATION.

(Continued from page 705).

Dr. J. J. R. Patrick, of Belleville, Ill., read a report showing the progress of the investigation regarding prehistoric crania. The result of the past year's labors will be prepared and published in time to be made part of the transactions.

Dr. Corydon Palmer, of Warren, Ohio, then presented the association with an oil portrait of the late Dr. Wm. H. Atkinson. It was the hope of the donor that this picture shall be the nucleus of

a gallery of distinguished men who have graced the dental profession.

The report of Section I, on Prosthetic Dentistry, Chemistry and Metallurgy, was then read by the Secretary of the section, Dr. W. B. Ames.

Dr. D. R. Stubblefield of Nashville, then read a paper on "Peroxide of Hydrogen, *per se*." In experimenting with this drug, in its relation to effects on tooth structure, the essayist finds after careful experimentation with fresh unbroken samples, that there is present in the pure drug not only hydrochloric but also sulphuric acid. These are important facts when we remember that all of the manufacturers claim that their product is *absolutely pure* H_2O_2 . Any of the samples examined had sufficient HCl or H_2SO_4 to dissolve and injure the tooth substance with which it would come in contact. It was further noted that peroxide of hydrogen would effervesce when placed in a root canal, whether pus was present or not, and yet when the H_2O_2 was brought in contact with pus away from a tooth no effervescence would take place. When the drug was freed from acids no effervescence would take place with or without pus, in or out of a tooth.

Dr. E. Parmly Brown, of New York, then described a new method of making a band, using platinum, gauge 30 to 36, the band is made wider than necessary after it has been fitted and soldered with pure gold, the portion projecting beyond the end of the root is clipped and bent over so as to cover the end, being neatly malleted with a plugger to properly fit the root. It can then be soldered to any pin-tooth, by simply pressing the pin through the platinum, or it can also be used without soldering it to the tooth, as the cement will hold it in place.

Dr. W. B. Ames exhibited some specimens sent by Dr. J. H. Hollingsworth, of Kansas City, showing a method of making a hermetically sealed joint between porcelain and gold, for crown or bridge work; thin pure gold is burnished over the edge of the porcelain and when the gold cap is fitted to this the solder will follow the pure gold, thus making the joint perfect.

Section II. on dental education, literature and nomenclature then presented its report through the Secretary, Dr. Louis Ottofy, of Chicago. According to the report the number of dental colleges in the United States remains unchanged—33. There have been graduated this year 1,241 students of whom 900 graduated from

twelve schools, the remaining 341 being the product of twenty-one colleges.

A list of dental societies prepared by the section during the year, shows that there are more than one hundred societies of which but twenty-two had sent representatives to the American Dental Association last year.

The Post-Graduate Dental Association has established a course of study embracing three years reading of strictly dental books, for practitioners who are not dental graduates; after which they are expected to take a practitioner's course in some dental college and then become full members of the association.

A paper by Dr. C. R. E. Koch, of Chicago, entitled "State Boards, the People's Officers and the Profession," was then read by Dr. C. N. Peirce, of Philadelphia. The paper pleads for a college system which will result in the graduation of students wholly on merit, a college system free from monetary influence. The State boards should keep in mind that they have been created to protect the interests of the people and that this must be done regardless of the influence their action may have upon particular schools or men.

Section III., or Operative Dentistry, reported through its Secretary, Dr. N. S. Hoff, of Ann Arbor, Mich. The report referred to the work of Dr. G. V. Black on the "Management of Enamel Margins" as one of the valuable contributions in operative dentistry presented during the year.

Reference was made in the report to the gradual reintroduction of noncohesive gold for filling purposes in preference to cohesive gold. The combination of tin and gold is still in as much favor as formerly. Copper amalgam is said to have lost favor on account of its wasting properties. The oxyphosphate cements are said to be inferior to the oxychlorides for root filling purposes. Immediate root filling is said not to be as popular as several years ago. A number of new remedies, books, etc., were also enumerated. Dr. V. H. Jackson, of New York, read a paper on "Methods of Regulating Teeth," demonstrating his manner of employing piano wire for this purpose. Dr. A. W. McCandless, of Davenport, Iowa, presented a report on Dental Instruments and Appliances, among others the Ladmore-Brunton clamp and matrix, Fletcher & Marshall's matrices, Dr. Keefe's cervical clamp, Dr. Rowe's sandpaper disc holder, Dr. Kimball's disc holder and waste pellet receiver, Dr. Gilmer's electric root dryer.

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BRITISH DENTAL ASSOCIATION.

At the last meeting of the British Dental Association, held in London, August 21, 22, and 23, the writer observed the following with reference to the management of the meeting. It appears that it is not the intention of the officers or executive council, or those having the matter in charge, to encourage the reading of strictly scientific papers before this Association. It is more nearly a political body, destined for the purpose of upholding the law regulating the practice of dentistry in Great Britain primarily; and secondarily, the sustaining of the dental benevolent fund; thirdly, the prosecution of violators of the Parliamentary Act, and fourthly and lastly, the holding together of the various branches through central organization. This being the state of facts, there are only a few papers read, and those are mostly of a semi-professional character.

The necessity for securing attention for the teeth of school children and the appointment of dentists in the army and navy seems at the present time to be occupying the minds of the British dentists.

One very admirable feature connected with this meeting that we noticed was the management of the clinics. All of the papers and essays and reports of committees were read during the first two days, that is, Thursday and Friday. After the adjournment of the Association, the election of officers, selection of next place of meeting, &c., the clinics were held. This seemed to hold a body

of dentists together better than anything else, as on the last day (Saturday), the clinics were so interesting and the bacteriological exhibits of such great importance that we noticed nearly 300 visitors during the morning.

This matter is respectfully submitted to the managers of dental societies in the United States as one well worthy of imitation.

The side issues connected with the holding of the meeting of this Association, were also of such importance that none of the members felt the necessity of hastening home to meet an appointment. Every evening is provided with some sort of entertainment, socially and for the inner man. The afternoon is devoted to teas, conversaciones and garden parties, so that a visit to the British Dental Association means a visit of relaxation, of pleasure and of profit not only physically and mentally, but morally and socially.

THE NEW YEAR IS APPROACHING.

About this season of the year you may think of renewing your subscription or inducing a friend to subscribe for a dental journal. Any one not now a subscriber forwarding his name and address will receive the November and December issues free.

A PROLIFIC YEAR.

The dental colleges of the United States never had as great a responsibility as that resting upon them at this moment. There never has been, and probably will not be again for many years, an equal number of students presenting themselves for graduation as are now in attendance at the various schools. It rests with the teachers in our colleges to fit these young men for the proper performance of their duties as practitioners, and when the large number of graduates to be turned out next spring is considered, it gives some idea of the effect the present session's teaching will exert on the future of the profession.

Every graduate we send out on the world from our colleges helps either to elevate or degrade the profession. There is no such thing as mediocrity in this connection.

Dentistry is just now in a transition stage. It is passing as rapidly as circumstances will permit from a plane of empiricism into the dignity of an established science. The world is weighing

us in the balance as it never has done before. It is taking more interest in the question of our professional status, and will in its own due time assign to us the sphere to which our qualifications entitle us. In the estimate which the world is forming of dentistry, the individual qualifications of every man calling himself a dentist weighs either for or against our reputation. Especially is this true of recent graduates. The thinking public, and particularly those interested in education in other departments of life, are beginning to wonder how well we are educating dentists. The whole question of education never had such a hold on the people as it has today, and there never was such a revolution in methods. Every institution calling itself a school or college holds a certain degree of interest for the majority of the thinking class, and when an individual has a diploma from a school or college, it is expected that his qualifications raise him slightly above the common herd.

To sustain the reputation of dentistry and dental colleges we must see to it that those expectations are fully justified. We must arm our students with a broad scientific knowledge to the end that they may take rank with scientific men, and we must also equip them with a high degree of manual dexterity and good discriminating judgment to the end that they may go out in the world qualified to do justice to the patients who trust themselves to their care.

The experience of one college year should serve as a lever to raise the quality of the work for the year following, and consequently each successive class should be better equipped than the one before. In order to accomplish this the teachers in our colleges must manifest unlimited enthusiasm, and untiring energy, for to properly teach such subjects as those relating to dental science requires a larger outlay of mental and physical force than most men not engaged in the work would imagine.

There should be a friendly rivalry among all the colleges to see which can turn out the best men—and, by the way, that is the only kind of rivalry that should exist.

More important is it than ever before that during the present session every teacher in every college should exert himself to the limit of his ability, so that when the college year just running shall end it will prove to be a year prolific not only in numbers but in advancement toward higher education.

C. N. J.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

To the Editor of the Dental Review:

DEAR SIR:—Some time since—I think about twelve years, Dr. E. J. Dunning made a statement in an annual meeting of the Odontological Society, that do all you might, ultimately the forceps were in demand. This remark called out a vigorous reply from the late Dr. Atkinson, earnestly advocating that to be forced to to apply the forceps was only a proof of inability to save teeth. From Dr. Dunning's standpoint it was true, but it is proving true from the standpoint of the statement of Dr. Atkinson in a much larger sense ; i. e. a larger percentage of teeth are being saved by the advanced methods of practice taught by Dr. Atkinson. I do not say that Dr. Dunning was a practitioner of small ability. He was above the average of his time. Dr. Dunning's strongest point I think, was the earnest manner he had with his patients in the personal care of their teeth. So far as my observation has gone, it has only viewed his work in the mouths of the more favorably situated. This adds decided help on the side of better results—so far as it applies to Dr. Dunning's practice. It is much easier to save the teeth of cultivated people, for they will follow better the teachings emphasized in their personal care. My further knowledge of Dr. Dunning's ability was received by his lectures in connection with the New York Dental College. While he did advance strong features of practice worthy of note, yet he was so narrow ;—by this I mean—he believed scarcely in any one but himself, and manifested it so emphatically that it was disagreeably noticeable to those who listened to his lectures. This was a strong weakness. This personality did not allow of greater growth, by associations of broader cast. While Dr. Atkinson was of an emphatic individuality, yet his desire for knowledge was so earnestly on the alert, he was constantly in a progressive atmosphere. This fitted him for higher attainments, and makes him the better authority in combating the statement of Dr. Dunning. The former knows no limitations, but is always climbing toward greater possibilities ; the latter limits himself to only what *I think*. This was a marked characteristic of Dr. Dunning's. It was inbred. So with Dr. Atkinson. Dr. Atkinson becomes the teacher of the entire profession ; Dr. Dunning

to a limited few. Any one of a liberal range of thought will see at a glance why. Dr. Atkinson would advocate less for the forceps, and apply greater efforts for conserving teeth. Dr. Atkinson has been on the stage of his activity and passed on for a higher career, we will believe. We have said elsewhere that he found dentistry a trade ; he has left it a profession. He found it a *business* ; he has marked it a *practice*. He has proved that it costs more to save teeth than it does to fill them ; we mean by this it costs more to gain knowledge in any and all fields, than it does to work in one's small acre continuously. No practitioner has lived that has so emphasized the importance of his calling, as did Dr. Atkinson, and the progress that has and will continue to follow the teachings he has freely given will do much to save teeth as a prey from the forceps.

We have referred to Dr. Dunning, and it occurs to us that there are many of the readers of the REVIEW that do not know that there has been such a name among dentists. Dr. Dunning has not contributed much, if any, to our literature ; neither has he ever fraternized much with his fellow practitioners. We first met him at an invited gathering by the late Dr. George E. Hawes, of Bond street, New York. This meeting was for the purpose of popularizing the New York Dental College by the addition of what was thought to be the more élite portion of the New York practitioners. We found Dr. Dunning a gentleman, but of a rather cold nature. We have heard much of him, and his large and lucrative clientèle, which was a fact at that time. One feature of his practice we were much interested in and so we plied him with questions concerning its workings. He had established the method of charging for his professional services by the hour, which at this time he informed us had been \$15 and we were assured by facts, coming to us afterward, that he had no difficulty in maintaining it with the class of people he served, and they had such confidence in him that his time was fully in demand. His conversation with us at the time we speak of, so impressed us, we felt inclined to apply some of his ideas. This was in the days of the flourishing Brooklyn Dental Association (years from 1862 to '65), which was after absorbed into other organizations. We wrote a paper and read it before one of its meetings, which was held at our office ; in this paper we advocated the time basis, and stated we had decided to apply it in our practice, charging \$10 per hour. I

think my memory tells me that Dr. L. D. Shepard, of Boston, was present and took so much interest in the matter he also decided to apply it to his practice, and I believe he continues it to this date. Not a few of the New York practitioners adopted the time basis, but varying the sum, even putting the fee as low as \$2 per hour. When Dr. Atkinson came to New York in '61, he had adopted as his method of charging \$1 per grain for gold fillings. While it came somewhat into use, it was quite readily substituted for the time basis, and the Dr. himself soon adopted it more or less as a basis of his charges as long as he continued in practice, which was but a few days before his going off, making his charges for his own services \$25 and his assistant's extra. There has been a good deal of evolution in methods of charging for services since we were in practice. When we commenced practice, charging by the "job" was the prevailing method, then we called it "prices," now it is "fees." We are growing more refined, and why not? Dr. Dunning, while we are not wholly familiar with his plan, but enough to give some information, had what might be justly termed an institution. He took young men for a period of years, four, I think, and gave them half they earned; or received during the time. In the mean time they were instructed wholly into his methods of practice, which I have said were emphatically his, and none others did he adopt. He used exclusively noncohesive gold, spring shank fillers, and never did he adopt such inventions as rubber dam, engines, et cetera. It is a fact that most of his followers have held themselves aloof from association with their fellows, showing the power of example. The office, as long as Dr. Dunning continued in practice, was in Waverly Place, just west of Broadway, near the New York Hotel.

Dr. Geo. E. Hawes, Jr., became an apostle of his and a great favorite. Dr. Hawes was a young man of very aristocratic bearing, with a liberal education, and in many ways he was well fitted to take his father-in-law's place, but seemingly, just at a period of his usefulness, pneumonia took him from his earthly career. Dr. Dunning's career was changed by ill health and misfortune, and since his glory has much departed from what was deemed the famous Dunning practice. Dr. Dunning was a favorite and successor of Dr. Eleazer Parmly, for many years "the" favored practitioner in New York City. He was a man of cultured bearing and favored, as much considered—with riches—*i. e.*, houses and lands;

leaving it, as all must, at the end of his course. This amounted to several millions. If I am rightly informed, he married a fortune, and by judicious investments made an accumulation. Dr. Dunning became Dr. Parmly's successor, and so highly esteemed, it was an opportunity not often presented. Dr. Geo. E. Hawes, Sr., was a practitioner well and favorably known in his calling. He at once saw much in Dr. Atkinson's introduction into New York and was not slow to improve its advantages. He was one of his earliest and most enthusiastic admirers. Dr. Hawes, as he became older was shrewder than some, he saw an advantage in having assistance in his practice, and making it profitable, not only to himself, but to others, thus doing good and getting good. Many know, and many young men do not know, that Dr. Varney, designer of the noted instruments bearing his name, was a student of Dr. Atkinson's. In the early part of the war (with our brothers) enlisted as an assistant surgeon; he then not having finished his full term of student life. On his return from the war came to New York and completed his course at the doctor's New York office, although when he left the doctor was then at Cleveland, Ohio. Dr. Hawes had in the meantime fastened his shark discerning vision on Dr. Varney's marked ability, so evident—and he was not slow in securing him for a term of four years, giving him a half of what he received. Dr. Varney filled out his time faithfully and opened an office in West 36th St., near Fifth Ave. He became very popular with his patients and had no difficulty in securing a full practice at once. Dr. Varney was a man of decided opinions, even to rigidity, and what he determined for himself he would put into practice. Dr. Varney was not an easy disputant in societies, for he had but little patience with many. As a friend he was true and ardent. His fondness for his little patients made them enthusiastic in their praises for him, and he had their fullest confidence. This is a power for good in one's practice.

When he commenced practice for himself, he established hour and half appointments and making a fee of \$18. He lived only about eighteen months to enjoy his success. He, like the phenomenal Webb, lived a much longer life in noble purpose than many that spend many more years here. It is not so much the quantity of living as the quality; both of those men live on, and their works follow them, and have stamped their influence on the better doings of others. These examples are worthy of our best

thought. We referred above to Dr. Dunning's going clear of all new-fangled notions, so-called, such as the dental engines, etc. It is a matter of no little moment that there is being established a decided prejudice, yea more, a horror of the use of the engine: This by practitioners, whose names I could mention, and who are frequenters of society meetings. This occurs in two ways, first, by a class of men that at one time did "run well for a season," but found that to follow, or to attempt to follow, the advanced teachings of the fuller care of the mouth and teeth proved either that they could not measure up the requirements of a more intelligent standard and dropped back to what they thought they could do and make larger and quicker returns, and have transformed their practice almost into what is much termed a "New Departure" practice. Such a course too must meet the desires of what may be termed the "Élite" or "Society" goers. They have been taught by this lower standard that this easy going method will do as well, "only it will require occasionally a repair." "All these mechanical devices *we* have found not necessary." What is the result? Thousands of teeth becoming necessarily a prey to the forceps, and more, a decidedly uncleanly condition caused by the hodge podge materials used, and the largest percentage of such practitioners do not give intelligent attention to the *health* of the mouth in general, and hence ultimately, a failure to conserve teeth only of a small percentage. If these élite people could be told what is true, that such slipshod methods of practice made fertile grounds for filth and infection, the latter, so emphatically shown by Prof. Miller in the September number of the *Cosmos*, it might prove a hint in their interest. High-toned perfume does not cover fetid breaths that come of roughened surfaced paste fillings and soft saturated rotten gutta-percha stoppings that are so commonly found in mouths that are thus so dealt with, and many of these mouths are so prevalent with unhealth-forming acrid secretions that keep up a continued hypersensitive condition, so that with many, what they gain in the easy going way, they fully pay for by these adverse conditions. We do not half emphasize our daily thought of such results. There is also a class of practitioners that have brought much discredit upon the practice by their loose use of mechanical devices, which in their legitimate use are often beyond price, both for patient and operator, but become too often implements of extreme torture, which is entirely unnecessary, in the hands of more cultivation and intelligent care.

This besetting sin is far too common and needs to be emphasized in every office, and by a more humane practice disprove by the proper use of these devices, that instead of being "oh awful!" and "I do not wish that horrid thing used," etc., because of these abuses, many yes, far too many, are leaving their teeth to destruction, and those that have formerly endeavored to preserve them. Many of these people are ladies in middle age and are not up to anything like a normal condition of nerve vim from various causes, and cannot bring themselves by their will alone to forego what they have been led to think was inevitable crucifying pain. We emphasize again this repute that has become so prevalent; it is against the interests of humanity; it is more, it is sin not original with Adam. We say this, one who lets such reputation follow him by these common sayings, is an enemy to progress. Dental practice with the intelligence of the present day, is not necessarily painful only in a minimum degree. It is time that a halt is called, for far too many in high places are doing a "*business*" in the mouth, rather than to energize themselves to better preparation for demonstrating higher standards, thus proving that "it costs more to save teeth than it does to fill them." Never in the history of our calling was there so much of machinery in all departments, and what is much needed is a firmer purpose among those who are religiously ambitious for higher culture and "higher criticism." This not only needs courage of our convictions, but of all things, *moral purpose* that does not admit of looking back to find out what so and so thinks of me, but what do I think of myself?" "Seek ye this day whom ye will serve." We have allowed a degree of moralizing after reading the able and we think not untimely article in the last number of the REVIEW by Dr. Keyes. We have called the attention of several to it, feeling a degree of pride that an article of so much value should be published in the REVIEW and by one of our fellow practitioners. Many will not accept all the conclusions made by the author, but morally it must be admitted it is sound.

"You do it for me, and I will do it for you,"—a good text for dental sermons, I am aware, as all ministers say they are, that it is much easier to preach than to practice, but as "Thomas" says he would like to hear a little more on this subject, I have often thought I would publish an article entitled "The Secret Archives of a Set of Teeth," I may, but this will not be the occasion. "Thomas"

has had the experience of many dentists on the tickle me and I will tickle you plan. From my observation this is the most general method among dentists and sometime we will tell what we have learned is the method with physicians. Ye dentists. We will only give our own experience on this question now. All the work that has proved good for anything for us, has been paid for. In 1862 I applied to the late Dr. Wm. H. Allen of New York, for his services. I told him I did not expect him to do my work for "tickle." He replied: "I have made this rule; all dentists I regard at all, I am willing to render them my best services at half my usual fees; any dentist I do not regard favorably, I charge them full fees." Dr. Allen's work has all proved good to date. I think this the plan to adopt and better results would follow. We may not always feel like asking a fee for some service we may render, but I think where time, labor and materials are given it is worthy of a half fee at least. Something might be profitably said about consultations among dentists. There should be some agreement about these affairs. It has been much the custom to attend to the calls of other practitioners gratis, when by some circumstance they may be out of town or ill, etc. There should be some uniform method. This could be arranged readily by society bodies, yet, while rules may be laid down, there may be exceptions made. Dr. Atkinson did much to try and put these affairs into professional rule, but it cost him dearly, in time, money, and his affections, for too often he was sorely wounded by the dealings he received from his fellows in practice for valuable services rendered, and at the same time associated with teachings beyond price. To many has he furnished a home during their stay in the city and rendered extensive services for them, besides its being valuable instruction to them, and for it all received no remuneration, but unkind words about his prices (and as it seems with some patients), because they think the fee outrageous, go off and refuse to pay anything. "Is that honest?" Dr. Atkinson has done more than any practitioner that has lived by the courage he carried to the end of his career in deepening the impression that faithful, intelligent professional services should rightly claim a compensation akin to the physician. We do not hesitate to say that very few had any just conception of the real character of Dr. Atkinson's daily practice, what he was called upon to do, and what he aimed to do, and what he really did accomplish. We assume that our famil-

ilarity with his doings and the spirit of them, for a period of nearly thirty years entitles us with ability to impart information that will be valuable to progressive practitioners. Dr. Atkinson has left us an example for a new way of dealing with the oral cavity and the teeth, which will ultimately become so general that our importance in the field of humanitarian work will receive a recognition second to none other, and sickness of the mouth and teeth will not be cared for by the "Job."—Ex.

LETTER FROM NEW YORK, NO. 2.

To the Editor of the Dental Review:

DEAR SIR.—The summer has ended—autumn leaves are falling ; what will the harvest be? It is already apparent in one direction. The tired, languid step that could hardly keep up its locomotion for reaching cars or steamer is now seen in its quicker, more elastic movement, more avoirdupois, healthier color, in all an invigoration that promises more definite purpose. Its first manifestation was made by a vigorous demonstration in the way of clinics arranged by the wide-awake committee of the 91 administration, presided over by the level-headed President Kingsley. In the charge of Drs. Ot-tolengui, Rhein, Winkler and Roy. No mistake was made in the insurance of an active year for the First District Society. Close to 100 attended the symposium of ability in finger craft. Dr. W. F. Davenport, of New York City, demonstrated his beautifully corrugated (crossway) fillers, used by hand mallet. The doctor was very neat and methodical in all his movements. Corrugated fillers are not original with the Dr. Dr. ———, of Syracuse, introduced a sponge gold cross-cut filler to the notice of the first district Society, about five years ago. We have a set of hand fillers corrugated lengthwise, we call them universal. We have seen lately the same idea among Dr. Dwinelle's cornucopia of forms. So far as I know each were original, and this is possible. Mallet force, I think, and cross-cuts or corrugations are the most satisfactory. Dr. Levi Howell, Riverhead, Long Island, operated with the Gibbs electric mallet. The interesting feature of the Dr.'s exhibition was a case of some fifteen operations by gold caps used for tips of abraded eroded teeth. They were shown at the anniversary meeting of the First District Society two years since. They were made caps of 24 karat gold, with pins soldered to them fitted to the

teeth principally by burnishing and cemented on. These were both on the upper and lower teeth. The work was decidedly of an interesting character and reflected credit upon the Dr. Dr. Brown, of New York, exhibited a new porcelain crown in which he solders his pin into the crown instead of having it baked in. The form of the pin is likened to the looped end of a surgeon's dressing needle. It being flat and opened by the loop form, it admits of a spring or gives when being forced into the cavity; this spring is a decided support, labially and palatally or buccal and lingual. The loop admits of a better adaptation of the cement or gutta-percha. In the models it indicates a very unique and useful crown. All the parts will be supplied by the dealers. He also exhibited a tongue holder of spring metal that by doubling like the letter U it is supported directly on the tongue, and the palatal portion of the mouth; the patient can safely swallow without any fear of swallowing it. It is delicately and neatly made into fine form. Dental specialties were presented by Johnson & Johnson, New York City. One of the worthy note to dentists was "Cottonard," very absorbent and also sterilized, intended to replace the use of napkins. It was an attractive article selling for a dollar per pound, making an equivalent of 400 napkins.

Dr. F. A. Roy, of New York City, exhibited his form of a sterilizer for office use. It was a neatly formed metal drum that could be easily attached to a heating apparatus and kept in immediate readiness with slight care. It was noticed in conversation how few grey heads were present. A good mixture of outsiders we met. Dr. Moore, of South Carolina, a gentleman of good ability. Our last meeting with him was soon after the disastrous earthquake at Charleston. He came north on the limited express for rest, and brought up at Dr. Atkinson's, 41 East Ninth Street.

Dr. Kells, Jr., of New Orleans, we found an agreeable and wide open-eyed, almost boyish looking chap; good big ears and well set upon his head and at such an angle that nothing new could easily pass him. He looks very much as we think like Dr. McKellops did when twenty or more years old and (almost) as good looking. The South has got a good deal of sand in them. California calls it "git," we call it *vim*. One of the noticeable things in the monthly circulars sent out by the First District Society calling the members attention to the value of an increased membership and urging the effort to bring it about upon the members. That is

progress in the line of movements in the body of the American Association. In our opinion no one thing could be more invigorating to the profession and a decided helpfulness for success to the meeting of '93. The indifference so manifest in many directions that we are conversant with is a matter of no small moment and more the mischief, because it is so largely among men that are well known and have pulled out for various causes, often very trivial. In many instances this occurs in places where it is advised to form societies. The leading men are of this indifferent class. If we were an editor we would appeal directly to these places in name and stimulate worthy action if possible. Such places are suffering for want of wide-awake association among dentists, and in every instance the daily press would aid them by giving an intelligent digest to their readers. We think, to promote the best feeling among members, this might be done by one capable of properly editing the proceedings, giving out so much as would be helpful to the committees, and let it be done only in the name of the Society. It is an easy matter for one that will give it a little study to take a practical resumé of what would interest and help the public and give to the daily press. Such a move would only enlist respect from the public and reflect credit upon the society, and every member would be stimulated in his pride. Nothing so much starts worthy purposes so quickly as *intelligent* pride, and there are quarters in which it cannot be brought about too soon. Not a little is said about politics in our bodies. May it, or may it not be too much the thought, that the word politics is a synonym for trickery. We do not think it necessarily so. They are needed and in our amorphousness we may not be able to get on without the politician.

There is a class of service before us that will need a good deal of vigor in executive working to bring matters into good marching order, and we are disposed to think and believe that things are moving favorably. Men that have proved their ability in, we will say in quite an unused way, are in their appropriate places, and they will make a success out of the material at their disposal. Discernment among the rank and file is of no mean quality in these days, and all that are in our service will get free criticism; and this if fairly applied need not be viewed as fault-finding. Let us exhort one another daily and encourage all possible inspiration, and this coming from a righteous source gives understanding.

The large central room in which the monthly meeting of the

First District convened this month was an inspiration to all men of taste; it is a room of cultured decoration. The new Academy of Medicine, No. 17 West 43d st., is well worthy of a visit from those visiting our city. Dr. Dwinelle and Clowes were conspicuous as veterans of fifty years in faithful and laborious service, but do not tire in their attendance of these meetings. A noticeable feature of this opening meeting for the fall and winter campaign is the large sprinkling of young and wide-awake practitioners. It is a very hopeful sign. A unanimous vote was taken in favor of holding an anniversary meeting in January. This society has never failed to take the *belt*, and we mistake the character of those in charge if the reputation is not sustained. The West has always been a factor of more than ordinary interest in these meetings. They are much welcomed in New York. Dr. C. E. Kells, Jr., of New Orleans, entertained the October meeting with a paper on "Erosion, its Etiology and Therapeusis." This not being a small subject, we queried how such a small boyish looking fellow would succeed. He could not accept the theory of electrical action called electrolysis. Neither Dr. Black's theory, neither Truman's—nor what had been (thought to be) Kirk's theory. The paper was brightly prepared and well read. The paper reviewed the theories of Drs. Black, Truman, Kirk and others, yet we failed to discover that he really brought out anything original. We think he fell into the same error as these in using the term of *acid* action instead of *acrid*. It is our thought regarding this action that *acrid* better answers the query how this process is carried on. Dr. Kells on the whole did not seem to indicate that he had gotten much if any light from any of the views advanced. Dr. Geo. S. Allan led in the discussion, and we much agree with him, that the essayist did not seem to mature a theory that would seem to make obscurity more definite. Dr. Allan found himself to be an agnostic in the matter. Dr. Stubblefield of Nashville, Tenn., was present (by a paper) on the subject and brought up much like the rest.

Dr. Kirk, the new editor of the *Cosmos*, took part in the discussion and the principal point in his remarks was in correcting his former statement made in a paper read before the First District Society, in which he had echoed Prof. Truman's views, perhaps giving the impression that they were original with him. Viz.: that the condition of the secretions of the labial and buccal glands become acid and hence the deformation of tooth substance occurred.

So far the doors are not closed on erosion, still there is room for further effort. As we have already given our thought upon the much talked of subject, we did not see anything advanced in this discussion that made us feel any less tenacious in defence of our views. Some may say, what comes of all this if no decision is secured? Well, it is with this, as with many things, the friction is sharpening us for future thought; ultimately we will get there, and what we know not now, will perchance become knowledge of the coming practitioner. Possibly some bright mind will have these discussions pass before his vision and spurred by a rightful ambition put himself to the task and make it so plain that many may marvel and say, how simple! yes, as all knowledge proves. Judging, therefore, of the executive committee, a programme full of promise is offered for the coming year. There is no indication that the First District Society will lag, and honor will crown those that contribute to its growth and prosperity. The spirit of the self-sacrificing Atkinson will always brood over the activity of this prominent body of organized colaborers. The increasing number of young and earnest practitioners must be a source of pride to all that have the true interest of the society at heart. While we write, news comes to us, suddenly apprising us that in such an hour as we think not the summons may come. To Dr. Kingsbury, for many years Emeritus Professor of the Philadelphia Dental College, it has come; he has gone up higher. This is the fifth one of the number of patriarchs that have passed on, and others with sails fluttering in the fitful gales that so much often burden the advanced years. Let us desire that all such may find a peaceful harbor. Prof. Kingsbury was among our earliest Philadelphia acquaintances, and the truly earnest McQuillen also. Prof Kingsbury was truly a gentleman, and that is not a little to say of any one. And another has gone whom we chatted with but a few weeks since while in our daily walk in Fifth Ave. Dr. Grout, not so familiarly known among those outside of New York. We first made his acquaintance at Dr. Atkinson's twenty-five years ago; he was in the employ of the doctor in the construction of his so-called mechanical work. I first saw from the work of his hands some of the finest pieces of gold plate dentures that could be desired. He was something of an inventor in crown and bridge work. He so formed his bridge that he set all his crowns into it by cementing after the bridge was in place, and in case of repair he had only to remove the broken

crown and replace by the same process. This he secured patents for.

The Odontological Society rooms were well filled at the opening fall meeting this month, and if all were not appreciative of the subject presented, it could not be the fault of the lecturer, Prof. Garretson. The professor was up to his best on the subject, "Diagnosis." Every one should be able to better grasp such a valuable adjunct in practice. The professor was ostensibly endeavoring to show how to trace "obscure pains in the jaws and about the face." Yet it was vastly instructive in that obscure understanding of what constitutes an intelligent diagnosis. The professor started out by saying that back of pain was a cause, a "dis." Pain was interpreted as meaning altered sensation. We had, he said, in our experience learned to become familiar with certain things which were exciting; these he would arrange within a circle and commence to examine from the number one, on it might be to the number twenty. By a process of exclusion, as he termed it, we might be compelled to accept the last as a cause. He gave some very interesting statements of tracing obscure pains. One I will mention. A naval officer, stationed in Japan, was attacked with an excruciating pain a little one side of the crown of the head. It was sought for by many prominent physicians in Europe and elsewhere and finally he was forced to accept the probability that he was a victim of softening of the brain. The professor was applied to; he sought through the full list of causes he had before his mind, and could find nothing but a superior bicuspid with a very fine large gold filling. He fastened on this to the tooth and took it away, which proved the exciting cause. Doubtless this will raise the question, why he thought the tooth with a large filling the cause? Dr. Morgan Howe, queried, and put the question. He replied that he could find nothing else. We think the professor, if plied more closely, would say, that possibly the great amount of energy put upon the operation might have produced a disturbance on a part of the nervous track which terminated at this point on the head, and possibly by reflected action. He mentioned cases where he had been obliged to remove the entire maxillary before being able to control excruciating pains. The professor's demeanor was of an admirable character from first to last. We cannot listen too much to such teachers. The whole profession could well afford the cultivating of a righteous pride that he is of us. One of his favorite remarks

to us has been to make the finest surgeon he would have him first a dentist, for the finer cultivation of finger craft fitted one in the highest degree for the conduct of surgical work. Our calling has produced some men of marked degree on whom the memory can fasten with tenacious satisfaction, and this is continuous as the years come and go. We do not think there is any calling that offers a more fertile field or more noble ambition than ours. This fact will be more and more apparent and will attract a finer quality of applicants.

These things need the greatest direction of all that is manly in the highest degree.

We have never had anything but the sincerest love for our work in all our thirty-eight years of practice, and instead of any diminishing of this feeling, it is even growing upon us. We hope to fill out a full measure of our career in this spirit.

New Jersey central had their "par excellent" bimonthly dinner the third Monday of this month. There were 58 at the table and all went off vivaciously. They had their last *Smoke*. This is decided by vote. So it was emphatically announced by a placard hung on the walls during dinner hour, which called forth no little merriment. It was this, "*You will smoke no more here, but down below.*" The subject of the evening was all in your eye. The essayist directed the thought in the direction of dentists' moderation in uses of their eyes. A good deal of attention was paid to the proper direction of light into the office. There seems but little agreement regarding the direction from which it came. It seems that office windows are at all points of compass. Dr. Stockton emphasized the use of the kind of glass in his office windows which is termed rolled glass, which has all properties of conducting light, but has no glare, and always easy to the eyes. Dr. Kingsley spoke of his visit to Dr. Sylvester's office in Berlin during his visit there this summer. The Dr. has a very pretentious display of fine things in his office which would cause one to query whether they would not obstruct the light; but the Dr. had devoted special attention to having good light and this by a focalized light bringing it direct from a small space in the central part of the window. It seems that Dr. Sylvester has captured the royal family for a part of his clientèle. Dr. Evans has held the sway in this line for many years. We do not imagine that they make any more desirable patients than other humans, yet they are a notable acquisition and it is a laudable ambition for a skillful practitioner to gain.

If we were asked, who were our most desirable patients, it would not always be those who have riches, yet if they are liberal minded they are able to do the pleasant thing by us. We cannot but say that a liberal fee is a pleasant thing to have, when a reward for faithful skill.

The Brooklyn Society for October was light in number. They handled "Toothache" as a subject capable of many interpretations, even if a New York dentist did ridicule the committee because they claimed it as a scientific term. *What do the men think of it.* There is a difference of opinion between New York and Brooklyn. Who shall decide when doctors disagree?—Ex.

REVIEWS AND ABSTRACTS.

[We take pleasure in republishing the following from the pen of a dental editor on account of its merit as well as its appropriateness at the present time.—ED.]

IS DENTISTRY A DANGEROUS PROFESSION?

BY DUDLEY W. BUXTON, M. D., LOND., B. S.

Member of the Royal College of Physicians.

Some few years back, Mr. Oakley Coles, then a leading member of the dental profession, brought before the Odontological Society of Great Britain, the subject comprehended by the question which stands as a caption to the present article. It may appear an unnecessary, nay, even a frivolous, theme upon which to occupy the valuable hours of our already overburdened lives, but I venture to think that a few moments of thought will enable us to show the question is no mere mental gymnastic, and that in its answer is involved the happiness or misery of many, while to discuss what is a natural pendant to our theme, the hygiene of the dentist's life involves matters of the utmost importance to the busy brethren who form the dental profession. It has been alike my duty and my privilege to work with and watch at the bedside of not a few dentists and dental students, and the knowledge thereby gained has set my mind athinking again and again upon the problems how should a dentist live so as to gain health and retain it, in what manner may he obtain the greatest amount of work with the least amount of wear and tear.

It must, I think, be conceded that the life is a hard one, not so

much from the length of time during which the individual is called upon to work as on account of the physical sameness, the unequal distribution of muscular strain and the tension involved in conscientious discharge of the duties comprising the diurnal life of the ordinary dentist. Again the work is all indoors and is carried on in more or less tainted air. Over and above these drawbacks to the calling there are those which involve his nervous system, congestive neuritis from standing in one position, the strain to the eyes and the nerve tension incident to due coördination of eye and hand involved in the accomplishment of fine and delicate manipulative dexterity. Probably no profession takes quite the same position as regards its effects upon health as dentistry, and I venture to think none offers quite so many opportunities for noxious influences to attack the individual. Luckily, however, that even with this proneness to run off the rail of health, the life of the dentist need not be really unwholesome. There are pitfalls it is true, and these are numerous as well as dangerous, but Nature kindly gives us excellent warning notes of danger, and we possess knowledge adequate to grapple with the troubles which arise, and still better, enables us being forewarned to be forearmed by calling in the assistance of prophylactic methods and relying upon the plain teachings of hygiene.

It would be folly to attempt to lay down hard and fast rules for men who, although following the same calling, yet differ so widely alike in the exigencies of their circumstances, in their tastes, and in their physical equipment. To suggest various plans for lessening the evils may subserve a useful purpose, while the adaptation of the rules themselves to suit variety of circumstances must be the work of the individual. What has struck me has been the prevalence of neurasthenia, nervous irritability, diseases clearly traceable to impaired nourishment of the nerve centers, and peripheral nerves showing themselves in neuralgias, *e. g.*, migraine, sciatica, herpes zoster, asomnia, etc., etc.; all evidences it will be said of chronic overwork, but when we find them occurring in persons whose hours of labor are not unduly prolonged, we are compelled to believe that the nature of the work rather than its quantity is responsible for its bringing about these untoward results.

To secure immunity from neurasthenic troubles, *i. e.* from affections or diseases, the result of nerve exhaustion, certain precautions should be taken, and these we propose to consider. (1.)

number of hours of continuous labor. (2.) change of work. (3.) clothing. (4.) arrangement of day. (5.) hygiene of work room. (6.) recreation.

In considering the first heading, it is a very difficult matter to be more than vague, and therefore unsatisfactory. Some men can take appointments from 9 A. M., or even 8.30 until 6 or even 7 at night, trusting to the "slack time" for easing off, and do not, to the casual observer, appear to suffer. That they do themselves an injury eventually I have no doubt, and I believe, were we able to get at reliable life insurance official statistics we should find that the expectancy of life of such persons is certainly lessened. However, the number of dentists is too few to base any conclusions upon insurance figures, the more so as I find, that as a profession, they are not provident in the sense of insuring at all adequately, when it is considered that they make relatively large salaries or incomes early in life, and so marry young. Another flaw in this way of getting at the truth about the longevity of dentists is that the affections noted above are perhaps actually less inimical to life than to health, must tend, that is, to bring about rather a condition of chronic invalidism, than to determine premature decease. Providence against sickness, involving the principle of paying yearly premiums to secure a certain weekly allowance during partial or complete disablement through illness has not until within the past few years taken any hold upon the medical profession, and although the various offices now undertake the underwriting of these health risks, there is no special one for dentists as there is for members of the British Medical Association. The Benevolent Fund, that wise provision of the corresponding Association of Dentists works, I believe, upon eleemosynary lines, and therefore, of course, does not take the place of an insurance association against sickness, injury or death. If an engineer, or constant traveler should insure against accident, certainly the dentist should against sickness.

The average health limit of continuous work should be fixed at six hours a day, the hours of labor over this limit are of inferior quality *as a rule*, of course many exceptions occur. A senior student at Cambridge, who subsequently came out senior wrangler, was asked by a "ten-hour man" how it was he read for "only five hours a day," and his reply, that although he read five hours only, yet while he read, he *read*, applies with equal force to other matters besides reading for examinations. There is a great deal of very

indifferent work done by professional men, not perhaps done dishonestly, but nevertheless scamped work, and this is the direct result of an attempt to get through more than the tired hand and unnerved brain are capable of duly carrying out. Hard workers will readily agree that it is futile for them to look forward to "slack times" for recuperation, for, like a falling body, the hard worker gains momentum, as he travels along the habit grows, and when the slack time arrives a hundred and one things intrude themselves into the day's routine, and transform its anticipated leisure into as great a stress of work as usual, for these additional things which have to be done must be deposed of before the "busy time" again comes round. Thus it happens that unless the hard worker makes a determined stand and reduces by scale the hours in which professional work is to be done, he never gets free from, and as year succeeds year he grows more than ever the slave of his profession. Hence the absolute importance of restricting the hours of labor. Then comes the question of income. It certainly is a fallacy to say that given a limit set to work, an equivalent amount must be written off the earnings. What has been shown in the great labor movements applies to professional men. In a factory where overtime was habitually paid and men labored from 11 to 14 hours daily, an eight hour limit was experimentally tried, and the wages fixed at a rate which was equivalent to those given for the long day's labor plus the overtime. The employer did this expecting to lose heavily, but to his surprise he found the men actually got through more and better work during the 8 than they had hitherto done when slaving on through 14 hours. So the professional man will, I venture to think, find that both the quality and quantity of his work will really be increased if he limits his hours. To insure this, however, there must of course be time saving appliances, appointments must be kept alike by patient and dentist, and when possible the hall attendant or secretary must see that all preliminaries are duly attended to before the patient enters the operating room. Patients soon learn to respect punctuality, and the more readily apprehend its importance if sins of omission are made to involve an equivalent loss of time allotted to them while their fees are still enacted. Here again, a most important point is that the monetary arrangements should, when possible, be taken out of the hands of the principal. In this regard, it may be said that for young men commencing practice, it is childish to suggest the keep-

ing of a secretary, or official collector of fees and professional charges, nor do I deny that it is so, but such junior men have the leisure for such administrative work and should carry it out, and only hand it over to others when their time becomes sufficiently valuable to demand outside help. The point is, I submit, reached when six hours a day *good* work is required at their hands. All details of work, such as having instruments arranged orderly and at hand, bottles duly filled and properly arranged, everything in its right place and that right place known, and all apparatus, water, electric, etc., in perfect order are presupposed, for the man who muddles his surgery will certainly muddle his work, and will as indubitably lose more time than he uses.

When we speak of change of work or variety of occupation, it is assumed that the cares and duties of the profession are not allowed to monopolize all the working day. Recreative work, provided it does not tax the same senses in the same way as do the routine duties of life, is certainly a benefit to the individual, and can moreover be made to indirectly assist his life's work by cultivating his eye, or his touch, etc. Thus the pursuits of art, painting, etching, photography, undoubtedly assist indirectly the dentist just as a few hours at the engineer's bench or with the lathe, strengthen while they give him manipulative dexterity. Even in change of work there is a danger, for unless due care be exercised the point of physiological equilibrium is overstepped, and instead of the "off" work being recreative it becomes exhausting, and so, detrimental.

Upon the matter of clothing, much stress was laid when Mr. Oakley Coles' paper was read upon the necessity for warm and absorptive undervesture, and there is an undoubted need of this. The equalizing of temperature which the skin has to perform is assisted by the use of Jaeger, or some such system of clothing, but there is another and none the less important point, which is, that a complete change of costume be made after the day's work.

The operating room should be kept at a lower temperature than ordinary dwelling rooms, and hence the dress of the dentist should be warmer than his usual habiliments, and of course warmer than his outdoor dress.* The working dress should be loose, the feet and wrists and throat should be well protected, and straps or tight

*In outdoor exercise, whether walking, or riding, or cycling, the clothing if absorptive need not be very warm.

bands or badly designed braces carefully avoided, as in a constrained position bands become tight, which are loose enough when the body is held erect. Great care should be used to avoid bad habits as regards standing, *e. g.*, cramping postures, stooping, and especially permitting the weight of the body to rest for long upon one leg. The dentist's stool of course obviates much standing, but very many dentists find its use more irksome than standing. The ambidextrous have a decided advantage in being able to alternate their work.

The arrangement of the day is no unimportant detail. Whatever may be the hour fixed for starting work it should be preceded by a good breakfast and walk, or better still ride either upon a horse or a cycle. Gentle exercise is what is required, anything beyond this means unsteady hands, and many persons find cycling in the early morning causes too much fatigue and tremulousness of the hands. When this is so, walking for a mile or so should be adopted instead of it. An early rise, a cup of milk, and a piece of bread and butter, then the walk to be followed by a bath and breakfast is the best routine. Letters can then be glanced at and arranged to be dealt with subsequently. The day's work begun should not be continued for more than four hours without a break. The midday interval allows for a light luncheon, many find a biscuit enough, but when a more substantial lunch, *e. g.*, fish or fowl with rice, or other farinaceous pudding can be taken without inducing sleepiness or languor, it is better than the lighter repast, since that leads to an excessive dinner, which taken at 7 P. M. or 8 P. M., entails a severe tax upon the digestive functions. It is a common, but most objectionable practice for persons who have no appointment to call during this midday hour, upon the chance of "catching" the professional man; this should be ruthlessly checked. The professional day should close about 5 P. M., and steady exercise in the open air must be taken, whether wet or fine, and the dinner taken not later than 8 P. M., although 7 P. M. is a better time, as if the rational rule is followed of retiring to bed at 11 P. M., three good hours are thus afforded for digestion. Eight hours sleep is a proper allowance, and unless something like this be taken, asomnia and mental irritability are liable to show themselves. The physical fatigue of the day's work often leads dentists to forego walking and betake themselves to driving. As a matter of fact, this is a mistake, the fatigue felt is really not fatigue, but is rather exhaus-

tion of brain, coupled perhaps with a little straining of one set of muscles. If this feeling is combated and the walk persisted in, there will follow in most cases a reward, and that is, the fatigue rapidly wear off and exhilaration succeed. The nearest high ground and open space should be selected for the walk.

Upon the subject of the hygiene of the surgery, very much might be written. The best light comes from a north or northeastern aspect, glare is a danger to be carefully avoided, especially when refractive ocular troubles exist, such as astigmatism, but while too strong an illumination should be avoided, on account of the fatigue incident under these circumstances to the retina, equally a dim light should be avoided, as it engenders ocular disease by strain, often revealing itself in headache and visual vertigo. Ventilation should occupy an important place in the arrangement of a surgery. Ventilation, not draught, is the desideratum, and the periodic introduction of a small hurricane into the room, by throwing open doors and windows, is a mistake and a dangerous nuisance. A fire-place and an open window guarded by a board, placed in its plane to prevent a direct inrush of air, constitute a simple and effectual system of ventilation, when the more elaborate system of Tobin's tubes are not available. Unsuitable sources of ventilation are preferable to others, as most persons have a morbid dread of fresh air, and will, if they can, get a room stuffy. But flap windows falling from above, and even revolving window-pane plates have their uses. Heavy carpets and much furniture, especially if carved, are agreeable to the æsthetic sense, but are out of place in a hygienic surgery, as the most conscientious cleaner cannot keep the place free from dust and dirt from carious teeth, and lung exhalation is not devoid of danger to those who spend many hours in its neighborhood. Painted walls, polished floors, and matting capable of daily, or at least frequent wiping down, with a minimum of stuffed furniture, and an exclusion of saddle-bag settees constitute, I venture to think, a good general outline of what we should find in a dentist's room.

Books, heavily framed pictures, shields, etc., should not be allowed. The light need hardly now be dwelt on, for most persons fitting up their houses would employ electricity both for light and motor. In other cases, gas may be used, but only after consultation with a gas engineer, for although gas may be feeble as an illuminator, hurtful as a calorifire, and harmful from a health point

of view, it need be none of them. With care it may afford a splendid light, be made an efficient means of ventilating, and be excluded from the respirable air of the room. The Wenham system, when the rooms are large enough is a good one. Uncovered gas jets are bad in economy, deleterious to the eyes and the health. Open fireplaces afford the best, although perhaps the most costly mode of warming, many gas stoves are good, but they need careful working, and it is difficult not to get a used up condition of the air. Sprays of some terebinthine compound such as sanitas, terebene, pumiline, or better still the occasional burning of a few logs of Scotch pine, give an agreeable odor and ozonize the air of the room. The large amount of putrescent material which must circulate in the atmosphere of the dentist's room, and find its way into his own lungs as he inhales the breath of his patients should make him most careful to adopt such precautions. Bacteriology teaches us practical lessons, and one seems to me to be that the dentist's work brings him into constant contact with those mischiefs which, nature yet leaves for idle germs to do.

Many operators adopt a very bad habit of holding, or half-holding their breath while operating, this is decidedly injurious, as it diminishes the air supply to the lungs, and interferes with due depuration of the pulmonary air.

Much stress must also be laid upon the importance to dentists of gymnastic exercises. "I am no athlete," may be said, but no one is too old or too stiff to use dumb-bells and light clubs. These must however be skillfully handled, and graduated exercises learned or schemed to open the thorax, and ensure a daily thorough wash-out of the pulmonary vascular system, and so obviate stagnating pulmonary apices.

When we turn to consider recreation, we find much again to say, but space compels me to curtail my remarks. I would preach moderation in all things, less the fate which befell the literary lady befalls the more energetic of dentists. Writing with enthusiasm for far longer hours than her brain could properly accomplish, she took her leisure in hoeing potatoes and digging, and in these pursuits her energy again hurried her into excesses, resulting in a paralytic disease, which in time crippled alike her mind and her body. Outdoor pursuits of course stand first, air and exercise, cycling, riding, or when the weather is perverse, rackets, and failing these, a good walk and a Turkish bath stand preëminent for

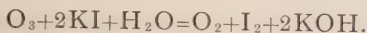
exercise. Mental recreation, I will not venture to insist upon, as in these days of culture, every one reads, and some few think, while yet fewer go first hand to Nature for her enchanting teaching. The same hedge-rows which spoke to poor Richard Jeffreys are yet eloquent for those who have ears to hear; the sunsets which inspired Turner are still occurring day by day; while in London, and the other great cities, Nature is not wholly stamped out, but offers food for thought, work for the microscope, the pencil and the brush, and our great cities also afford opportunities for hearing such music as may well make one rejoice in living. What more need I say? Possibly it will be replied by the cynic that enthusiasm on the matter of music, and of Nature's teaching is out of date, if it be so, I trust some one will have the courage to put back the hands of the clock, that we may all again grow as enthusiastic in our play as in our work, for after all, enthusiasm only means putting one's whole energy into the matter, and without energy, the spice of life has gone, and the work becomes slave's toil, while the play is a sorry travesty of mirth.—*Dental Record*.

PHYSICAL AND CHEMICAL PROPERTIES OF OZONE.

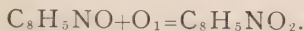
Ozone is a colorless gas possessing a peculiar smell, somewhat similar to that of diluted chlorine, and noticeable in ordinary life in freshly-baked bread and lawn-bleached linen. In air containing $\frac{1}{50000}$ part of ozone the smell is still distinctly discernible. Ozone is destroyed by heat (at 237° C., the change being instantaneous), and by contact with certain metallic oxides, such as oxide of silver and manganese dioxide.

A POWERFUL OXIDIZING AGENT. It is one of the most powerful oxidizing agents known; it attacks and immediately destroys organic substances such as rubber, paper, etc. One of the most characteristic actions of ozone is its effect on mercury (Roscoe). The metal at once loses its mobility and adheres to the surface of the glass in a thin mirror. Ozone has been liquefied at a temperature of -105° and under a pressure of 125 atmospheres. In this state it is an intensely blue liquid (Chappius). Ozonization is accompanied by a change of bulk (Andrews and Tait). In the formation of ozone three volumes of oxygen condensed to form two volumes of ozone, which, when heated, increase in bulk again to form the original three volumes of oxygen, while when acted upon

by potassium iodide, one-third of the ozone is spent in liberating the iodine, and the other two-thirds go to form ordinary oxygen, thus :



Hence ozone possesses the molecular formula O_3 , three volumes of common oxygen having been condensed to two volumes by the formation of ozone. ($3\text{O}_2 = 2\text{O}_3 = 2[\text{O}_2 + \text{O}_1]$). In a given quantity of oxygen O_2 there is only a small proportion transformed to O_1 , a number of molecules remain unchanged, and with these the molecules of O_1 combine and form O_3 . This single atom O_1 is lightly bound to O_2 , and is alone in the cause of the greater activity, as O_2 was previously present without being capable, for instance, of oxidizing indigo to isatin, and this is accomplished by the O_3 in a very short space of time :



The oxygen O_2 which is in the aqueous solution does not, as is seen, come into consideration. $+\text{O}$ and $-\text{O}$ act essentially in a similar manner.

PRACTICAL FORMS OF OZONE.

Aquozone (an aqueous solution of ozone). Where water is simply charged with ozone it is found that in a short time the ozone is converted into ordinary oxygen. After most exhaustive experiments the Ozone Manufacturing Co. have succeeded in producing a stable ozone water. The mode of preparation is patented, and effected as follows: Ozone, generated from pure dry oxygen gas, by Siemens & Halske's improved ozone apparatus, is passed under pressure into *distilled* and *sterilized* water which contains about 0.25 per cent of hypophosphites and phosphates; these salts, acting as absorbents, retain the ozone in the water by keeping it suspended and stable.

Ozonol is an oil preparation made from pure vegetable oil by passing ozonized oxygen under pressure into the oil until it becomes thoroughly saturated; the oil thus saturated retains the gas without the addition of any further absorbent; it is therefore simply oil containing ozone in solution.*

* The ozone preparations (aquozone and ozonol) may be obtained from Messrs. Johnson & Johnson, 92 William Street, New York, to whom all correspondence relating to them should be addressed.

OZONE IN NATURE.

Ozone continuously plays a most important part in the workings of Nature. It is necessary before studying its physiological importance to comprehend somewhat its position in Nature's laboratory.

Ozone is formed in the air on some grand scale, probably in various ways; at all events, a number of hypotheses are advanced to explain its production. It is chiefly generated by the action of the sunbeams on oxygen. Prof. Dore (quoted by Richardson) claims that for the whole planet the source is equatorial, and the point of development is where the terrestrial atmosphere is raised to its highest temperature. Ozone plays an important part in the formation of the clouds. Meissner demonstrated that ozone is greatly more hygroscopic than oxygen. Moffat advanced the hypothesis that the blue color of the firmament is due to ozone. The enormous and uninterrupted process of oxidation which organic matter on the surface of the earth is continually subjected to is to a great degree attributable to the action of ozone. Schönbein argued that ozone was a natural part of the atmosphere, and that where decomposition was not ozone always would be found. He discovered it on the tower of a high cathedral of a city; at its foot he was unable to obtain a trace.

Michael Faraday, in a lecture, stated, in confirmation of this statement, that he discovered plenty of ozone on the Brighton Downs, and that as he approached Brighton it diminished in intensity until it was lost altogether in the town itself.

The following experiment demonstrates that oxygen does not become active from sunlight alone. Pure oxygen is exposed in a glass jar to a Drummond calcium flame, and when it is then passed through a solution of potassium iodide starch the latter is colored blue, a proof that the formation of ozone was due to this illumination. The ozonization of oxygen in ordinary dry and clear air is inconsiderable; otherwise, however, in a moist atmosphere, especially in a light, transparent mist, it is formed to great extent, and the ozone smell becomes perceptible. This is the case, even to an unpleasant degree, in a thunder cloud.

Only the upper strata of the clouds and mists which are exposed to the sun contain ozone, whereas in dark and thick mists the lower strata, which the sun cannot penetrate, contain no ozone. There is no trace of ozone in a permanent mist, except with a

southeasterly wind, when, coming from the Gulf stream and the Antilles, it already contains ozone.

A great amount of ozone is held in the mist rising from the cold ground under a clear sky on a calm autumn or winter day. Ozone is only generated in considerable quantity when oxygen, water and sunbeams combine, as Schönbein has demonstrated (lawn bleaching).

From this it is apparent that in the upper strata of clouds and mists in direct sunlight the amount of ozone is continually being renewed.

On the other side, it is supposed that the production of ozone is a result of the extensive electric processes taking place in the atmosphere, and as the play of electric forces in the atmosphere is inexhaustible, the formation of ozone is in consequence continual. The formation of ozone in thunder-storms is thus accounted for, also at sea and in salines from the quick evaporation of the salt water, which is closely connected with a strong formation of electricity. The fact, recently observed, that the pressure of the breakers on the crevices of the coast produces ozone, can similarly be accounted for by the frictional electricity produced by the surf.

In nature ozone is not only produced directly by illumination of the inactive oxygen, but indirectly by the plants, owing to the illumination of the sun.

According to Scoutetten all the green parts of plants exude ozone as well as neutral oxygen during the day under the influence of light. The process begins in the morning, increases steadily toward midday and afternoon, and ceases toward the night, as is also the case by artificial protection from sunlight.

J. Jannieson asserts, on the strength of his experiments (*Pharm. Journal and Transact.*, 1879), that oxygen is absorbed by plants as well as by animals, at first forming an unstable combination, and then by being ozonized becomes active; secondly, that the plants contain a substance different from chlorophyll, which (similar to hæmoglobin in blood) serves as an ozone transmitter.

If each leaf only produces a small amount of ozone, what an immense amount of ozone must a forest containing innumerable leaves produce. In this way the plants oppose the accumulation of positive tension in the atmosphere. From this it is obvious that the State should protect the interests of existing forests. Extensive tracts of land which are not wooded are continually in dan-

ger of falling victims to the forces of nature ; for this reason they should be planted with trees. The pinus group especially has the property of very strongly ozonizing the oxygen of the air, and this explains the great amount of ozone contained in pine wood.

Ringk has made some interesting experiments on the influence of ozone on withered plants. He watered the earth of sickly house plants with ozone water. After a short time a remarkable and striking change was observed ; especially remarkable was the success obtained with palms treated in the same way. Ozone appears to be always contained in the air, except in such places where the accumulation of organic oxidizable bodies has destroyed the ozone. Presence of ozone has always been recognized as a sure sign of the purity of the air. Pless and Pierre found in 255 liters of air 0,02 mg. ozone. Zenger in 100 liters of air 0,000002 to 0,000001 gramme ozone. Of course the amount of ozone in the air varies with the time of year and day, and according to climate and local conitions.

Moist air contains, as already mentioned, generally more ozone than dry air, and therefore ozone runs parallel with the rising and falling of the amount of moisture in the atmosphere, attains a maximum from March to May, a minimum from September to November. Moist south and southeast winds therefore increase the amount of ozone, dry north and northeast winds diminish the same. Ozone is very plentiful during thunder-storms and calm, moist, misty weather. For the same reason woods, damp mountain chains, the neighborhood of lakes and the sea, exercise a beneficial influence on the amount of ozone in the air. OZONE.

PRACTICAL NOTES.

BY A. B. AND C. (D. LEFT OUT).

Our reporter was so situated the other day that he overheard the following conversation which occurred between dentists, we will call them A. B. and C.

A.—If you find decay under a large gold filling in a molar tooth—a proximal filling—and this filling reaches over into the crown and is very strong and substantial, what would you do with it?

B.—Well, in ordinary cases, I would repair it with tin and gold.

A.—How are you going to get the cavity dry so that you can fill it with tin and gold?

B.—Ordinarily tin and gold can be put in there in as short a time as amalgam, and you keep the cavity dry with napkins. It is not so serious with tin and gold to get a little moisture as it is with gold alone.

A.—Supposing there is a weeping of the serum, and accidentally you should wound the gum when you have a piece of tin and gold ready to put in there, and you find the space submerged?

B.—In the first place, when I use tin and gold in such a case, I would use it in the form of a rope. If I should wound the gum and cause bleeding, I should have to abandon the operation for that sitting, and if I did that I should pack the cavity full of gutta-percha, pressing it in there so tightly that the gum would be pressed beyond the cervical border, for the next sitting.

C.—That is necessary to begin with. Is it not a better way to cut away a good deal of the gold and then repair it with gold? The decay is soft and often goes under the gold filling. I have pressed the gum out of the way either with sandarac and cotton or gutta-percha.

A.—If the cavity is very deep, reaching near the edge of the alveolar process, I find that it is better to repair this with amalgam than with tin and gold, because you are certain of being able to pack it in there and reasonably sure of a margin. If it is only decayed a little above the gum line, I agree with you that tin and gold would be better than amalgam, and in order to insure a successful result space must be gained and the rubber dam adjusted over the tooth to keep it dry.

B.—You mean in the use of amalgam.

A.—No, in the use of tin and gold.

B.—What kind of amalgam do you use?

A.—Copper amalgam.

C.—Do you believe that tin and gold can be packed under water?

A.—I don't think so.

B.—I am not claiming that tin and gold can be packed under water.

C.—It has been claimed that it can be done successfully.

B.—A certain amount of moisture does not affect tin and gold very deleteriously, not so much so as gold in the manipulation.

A.—The probability of its being soft forces out the moisture mechanically, and is greater with tin and gold than with soft gold or noncohesive gold.

B.—The point is with regard to the manipulation of the tin and gold. We are not depending upon cohesiveness in the manipulation of gold where moisture interferes with the cohesive properties of gold.

C.—Do you think you can pack tin and gold when it is moist and make a good filling? It is claimed that this can be done. I cannot pack tin and gold so as to have it cohere properly or unite the pieces.

B.—Moisture will effect tin and gold deleteriously the same as any filling material. You cannot successfully pack amalgam under moisture.

A.—And certainly not gutta-percha.

C.—It has been claimed that all filling materials have been successfully put in under moisture—even gold.

A.—There is a filmal resistance that interferes with even the closest mechanical adaptation of particles of a sheet of gold or sheet tin, and this film, that is produced by moisture or gas is so adherent that it is impossible to drive it off except by heat.

C.—It strikes me that if I were to repair these places with amalgam the way I have seen others do it, so far up the root, discoloration takes place more readily, more so than if we were repairing a gold filling on the crown surface or lower portion of the tooth. If it is a living tooth discoloration will sometimes be so marked at this place that the gum looks blue.

A.—If it is in the posterior portion of the mouth, what difference does it make?

C.—It does not make any difference on the anterior surface of a bicuspid. I know it is an easy matter to use amalgam there and do it nicely too, but the appearance is against it. If a tooth has a proper filling it does not seem well to patch it.

B.—Ordinarily a repair filling on the proximal surface of a molar and bicuspid filling, at the cervical border of that filling brings the amalgam so far out of sight that it is not generally noticeable.

C.—It causes discoloration more so than if it were further down.

B.—I have not noticed that discoloration you speak of, particularly.

C.—Did you ever use copper amalgam in a place like that.

B.—I think copper amalgam is preferable. I have seen some cases repaired with ordinary amalgam and the edges of the amalgam showed shrinkage. In one particular case soft amalgam was used in an ordinary cavity.

A.—Supposing the pulp dies after you have repaired a filling with amalgam, say copper amalgam, and you bored through the crown to the filling.

B.—A gold filling?

A.—Yes, and reached the pulp chamber and removed the pulp and treated the tooth, etc., has it ever happened to you that in forcing medicine through the tooth, it came out between the amalgam filling and the margin of the cavity?

B.—I have never noticed that.

A.—I have seen it.

C.—That filling could not have been firmly packed against the walls.

B.—He means between the gold and the amalgam, or between the gold and side of the tooth.

A.—What are you going to do under these circumstances—remove the whole filling?

C.—Would it not be better in the first place when you discover this break beneath the gold filling to remove it.

B.—You are not certain that the gold was defective in any part?

A.—I have seen a number of cases where there was decay beneath the gold filling, and I have cut away sufficient to discover the whole extent of that and patch it up with amalgam. You are never certain in an out-of-the-way situation like that whether you have removed all decay or not. I have about come to the conclusion that the best way to treat a tooth of that kind is to remove a sufficient portion of the filling clear up to the coronal part of the tooth and repair it that way, rather than to put a little chunk of amalgam or tin and gold or gold in there.

B.—To be sure, unless you can get access to the cavity.

A.—It does not require more time to get space and to get the thing ready for filling than it would to just vigorously go to work and cut out a portion of the gold at once and discover the extent of the caries, and then gain a space afterward and refill that portion of the tooth.

B.—That would be a matter of judgment, of course. If there was a small failure at the cervical border and the filling was quite extensive, I think the repairing process could be done in much less time.

A.—If the teeth are close together, how are you going to determine that the cavity is small?

C.—You have to separate for anything like that. If you cut through, the probabilities are you cut away the place where the filling is anchored, and it is just as easy to make a new filling. You have to separate in such cases anyway, and the less you cut away the better. There is decay in these places beginning at the cervical border and under the filling.

A.—I find frequently that it is extensive, much more so than it seems, and having had two or three cases of the kind very recently, I, instead of patching the filling, simply cut away about one-half.

B.—Back far enough to get good anchorage.

A.—Yes. I think it is more satisfactory, and there is less danger to the pulp if the pulp is alive. If the pulp is dead I might determine to repair it with amalgam.

B.—So you generally refill when you have found extensive decay occurring around the cervical border of gold fillings, and you remove a portion of that filling so as to get anchorage. Do you refill with gold alone at the cervical border, or with tin and gold?

A.—If caries has penetrated beneath the remaining gold to any depth, and having removed it, there would be a necessity for a nonconductor. I fill that portion with the oxysulphate of zinc, and after it hardens—and it hardens quickly—I generally fill at the cervical border with tin and gold, and then complete the operation with gold.

C.—Why do you use oxysulphate instead of oxyphosphate of zinc?

A.—Because oxysulphate is a nonirritant, and it is probably a better nonconductor than oxyphosphate. Oxyphosphate is not as good a nonconductor as oxychloride.

B.—What would be the objection to using oxysulphate of zinc as a foundation for fillings in all large cavities instead of oxyphosphate?

A.—Oxysulphate is a better nonconducting foundation for fillings than oxyphosphate. As I have before said, it is a better nonconductor, it hardens easily, and it is not so irritant as either oxychloride or oxyphosphate.

B.—Whose preparation do you use?

A.—Fletcher's, but you can make it yourself.

B.—You cannot expect to get the same accuracy in the manufacture of it when you do it yourself.

C.—You do not use the cements much for temporary use now, or not as much as you used to.

A.—I prefer the cements for temporary fillings in the teeth of those persons where decay is going on rapidly, and where gutta-percha would wear too quickly. If it happens to be a large open cavity in a bicuspid or molar, extending to the grinding surface, I probably would pack one-quarter of the depth of the cavity with gutta-percha, and then put oxyphosphate on top of that so as to get a good hard surface for grinding, and not a vulnerable surface near the gum margin.

B.—I think if all operators lined the cervical portion of the cavity with gutta-percha before putting in cement, their operations would give much more comfort.

A.—I believe it. I have seen it.

C.—Cement is very uncertain.

A.—You can do the same thing with central and lateral incisors. It is true they will wear away and the friction of a toothpick will wear them too; but it is far better to protect frail teeth for a time in this way than to undertake to make gold fillings which are certain to prove failures before you begin the operation. I have now a lady under my care whose teeth are in such a precarious condition that there are more than forty cement fillings in them, and that is the best I can do under the circumstances. I have tried gold, and I have tried gold and tin; I have tried copper amalgam where it was not exposed to view, but there is decay around every filling I put in, no matter how well the work is done nor how much care I take to do the work.

C.—Is there any systemic cause for that?

A.—She takes good care of her teeth, and physically she is not unwell at all. She was at the office the other day, when I put in five or six oxyphosphate fillings for her, and told her she would probably not need any more before the new year.

B.—Some of those cases are very discouraging to treat. It is utter folly to put in expensive gold fillings.

A.—In the case of bicuspids, if the teeth are much broken down the best thing to do is to go to work and crown them at once.

C.—There is no question but what we do filling when we ought to do crowning. A few years ago crowning was done when filling ought to have been done. We are swinging back again the other way, and are not doing as much crowning as we really should do. What, in your opinion, is the best kind of crown to use?

B.—Molar or bicuspid.

C.—Yes, in back teeth.

B.—I would use a gold shell crown.

C.—I think that is right. Do you use No. 18 carat solder or No. 22 for crowns?

B.—I use No. 22.

C.—Have you ever noticed any difference between the wear of the two?

B.—I cannot recall any case where the gold covering has worn through to a socket. I have seen them, and on account of the articulation I had to grind away some portions. I never use a thin shell of gold, but platinum for that purpose. The reason I prefer 22 carat solder is because it does not tarnish so. I use it all through the crown. There are some mouths—perhaps you have noticed them, where in spite of the care given the teeth, these crowns do tarnish and look bad. Smoking discolors them. Probably some dentists use a low carat; but where 18 carat gold has been used you will notice after a year or two points where the soldering has been done. Unless we need a hard masticating surface it would seem that 20 carat is hard enough.

C.—What do you use in front teeth?

B.—That would depend upon the case.

C.—Do you follow any regular rule?

B.—I follow my judgment according to the case in hand. I do not depend upon locating the crown. I put on either a half band or a whole band—in many cases a half band around the lingual surface of the root.

C.—I have followed that method for some time, but I will never feel satisfied that the space between where the band ends and where the porcelain begins thoroughly fits the root. You have a lip, as it were, to the portion in front, and you have this band on the back where they come together and the gum comes down, I do not get the crowns fitted as thoroughly as they should fit.

B.—The half collar must slope from the lingual aspect toward the labial aspect of the root, so that it has

more band at the place where the solder fastens it to the cap.

C.—How do you fit it on?

B.—I may fit nearly the whole band bringing it quite out in front at first; when I get the lingual surface well adapted I mark the outline, trim it down to that leaving a sharp point at the extremity and fasten the labial surface.

C.—I have been in the habit of putting a piece of platinum or gold on the root, then about the posterior portion, and try it on the lingual portion of the root in that way, then grind the porcelain face to the front. You do not get so accurate a joint where you bend it over as you would if you used two pieces. Do you really think banding of the root is the best thing to do?

B.—A great many would differ in regard to that. I find some roots where it is impossible to take the risk of putting a band on them in every case. Where I have a strong root and I feel I can get good anchorage for the crown, I prefer a half band to letting the band go around in front.

C.—I think the trouble has been that all bands have been much wider than necessary. Oftentimes if I want to use a band, the best way I like to do it is to cover the end of the band with platinum so that I can handle and bend it to suit my purpose. I can grind off the top of the band as much as I please, which you could not do if you had the band separate and tried to fit it, having one end of it closed with a platinum cap. You can make a cap for the root, I have it go beyond the free margin of the gum. In a great many of the crowns I have seen there seems to be irritation about the gums. I think that is due to lack of perfect adaptation to the root, the band extends slightly beyond the gum attachment. I have seen some cases where the band extended some distance beyond and the gum remained in a healthy condition. We are not always as particular as we should be in fitting bands.—*Exeunt Reporter:*

? ? ?

DESTROYING PULPS.

TO THE EDITOR OF THE DENTAL REVIEW.

Dear Sir:—In answer to an article with the above heading in the October number of the DENTAL REVIEW, I give practitioner and also your readers my mode of destroying pulps.

I never apply arsenic to an aching tooth. After the rubber dam is in position and the tooth aching, I treat it with a so-called pulp remedy which is composed of

carbolic acid, $\frac{1}{2}$ oz.

oil of cloves, $\frac{1}{2}$ oz.

acetate of morphia, 15 grs.

or even oil of cloves alone will oft times be sufficient to allay the pain, which either of them will do in a very short time. Now dry the cavity and apply the pulp destroyer. For this I use a small portion of nerve paste made of

arsenic, 1 part.

antipyrine, 2 parts.

lanolin, 2 parts.

with this I mix a few fibers of S. S. White's Nerve Devitalizing Fiber, and place it into the cavity, either on the exposed or nearly exposed pulp. Seal cavity well with cement or gutta-percha. Discharge patient for one or two weeks.

I have had very few cases with which I had trouble, when using the two destroyers combined, but by using either singly I frequently had, causing severe pain, so that I was compelled to remove the destroyer.

Yours truly,

CARL E. KLOTZ.

St. Catharines, Ontario.

TO THE EDITOR OF THE DENTAL REVIEW.

In answer to "Practitioner" in the October Review, for a method of destroying pulps.

My method is as follows:

Apply the rubber dam, remove all decay possible, uncovering the nerve very carefully. After the tooth is thoroughly dry and clean, if there has been toothache apply a pledget of cotton saturated with the following: Alcohol $\bar{3}$ ss, chloroform $\bar{3}$ j, oil cloves $\bar{3}$ j, ether $\bar{3}$ iij, camphor $\bar{3}$ iij, laudanum $\bar{3}$ ss. This will relieve the inflammation and stop the toothache. After this has remained a few minutes, remove and apply a pledget saturated with the equal parts of oil of cloves and carbolic acid, seal this in the tooth with gutta-percha or cement until the next day, to allow all inflammation to subside and keep the tooth quiet. Then put on the rubber

dam again, remove the dressing, dry the tooth thoroughly, and if there has been no toothache, apply your nerve paste by saturating a very small piece of cotton and placing it over the exact spot of exposure, being careful to avoid pressure. Seal the cavity with gutta-percha or cement for thirty-six hours, then remove the paste and seal again for ten days if possible, when the pulp will be found to be completely devitalized, provided you have removed the inflammation before applying the paste.

The best thing I have found for devitalizing nerves is Baldock's Nerve Paste, as made by Ash & Sons. About nine-tenths of the operations with it are entirely painless.

Yours truly,
FRANK B. NORRIS.

Helena, Mont.

MEMORANDA.

Dr. M. R. Harned, of Rockford, Ill., was a recent visitor to the World's Fair City.

Wood pulp is an excellent absorbent of moisture. The kind druggists use for drying filter papers. Try it in root canals.

All dentists should use stomach pumps for tooth pulling—they are the best and most effective *force-ups* we know of.—*Exchange*

Dr. Rodrigues Ottolengui is actively engaged in the organization of a society of Buddhists in New York. There are said to be a great many believers in the doctrines of Gautama in that city.

Mme. Blavatsky is reported as writing to a London theosophist that she is "not entirely comfortable in the world beyond." There may be a few others in Akaza who could wish things were different.

Dr. A. B. Elmer, of Rochelle, Ill., whose name appears as one of the clinical instructors of the Chicago Tooth-saving Dental College of Chicago, desires us to state that his name has been used against his will, and in fact contrary to his request.

This is our fifth anniversary, November 15, 1886—November 15, 1891. Fifty-six pages in first number; how many in the sixty-first? It is no effort for us to make a large and interesting journal because the profession is with us. Twenty individual articles in a single issue!

The meeting of Northern Illinois Dental Society at Elgin, October 21st and 22d, was well attended, and was one of the most successful meetings in the history of that society. The time of next year's meeting was left to be determined by the Executive Committee, inasmuch as the dedication of the World's Fair will take place about that time.

Drs. C. A. Kingsbury and David Roberts, of Philadelphia, died recently. Both were well known, not only in Philadelphia, but elsewhere, as ornaments to the profession of dentistry, and were highly estimated as men of character and probity. Dr. Kingsbury in times gone by was engaged actively in college work but of late he had relinquished such work.

STRANGLED BY FALSE TEETH.

MILWAUKEE, WIS., November 2.—Thomas Flynn, sixty years old and a currier by trade, living at 222 Pierson Street, was strangled by his set of false teeth to-night. Flynn was eating supper at the time. In some manner the teeth became loose and went down his throat with his food. He made frantic efforts to remove them, but in vain and he strangled to death before the arrival of a physician who was summoned.

NORTHERN ILLINOIS DENTAL SOCIETY.

The recent meeting of the Northern Illinois Dental Society was the most successful in the history of the society, some sixty dentists being in attendance. Officers were elected as follows: President, E. J. Perry, Chicago; Vice-President, C. B. Helm, Rockford; Secretary, J. W. Cormany, Mt. Carroll; Treasurer, A. B. Elmer, Rochelle; Ex. Com., E. R. Warner, Chairman, Morrison; H. R. Staley, Lanark; H. C. Gill, Rockford. Rockford was selected as the next place of meeting.

T. W. BECKWITH.

WM. H. AND CHAS. B. ATKINSON,

CHAS. B. ATKINSON, D. D. S., SUCCESSOR.

41 East 9th Street, New York.

Office Hours 9 A. M. to 2 P. M.

This notice is deemed proper from the fact that a statement suggesting the discontinuance of the old practice at the old place has repeatedly appeared in the correspondence of dental journals and elsewhere. The office has been continuously open, except between April 2d and 6th, 1891, during the established operating hours, and will continue to be open to all of the late Dr. Atkinson's friends in the profession.

CHAS. B. ATKINSON.

Original formula for new elegant toilet requisites, by G. H. Dubelle, Ph. D.

FLORAL TOOTH POWDER.

Take of—

Precipitated chalk.....	200 parts.
Powered orris root.....	200 parts.
Powdered bicarbonate of soda.....	200 parts.
Powered sugar of milk.....	200 parts.
Powered red sandal.....	100 parts.
Powered white castile soap.....	50 parts.
Salicylic acid.....	40 parts.
Oil of peppermint.....	6 parts.
Otto rose.....	4 parts.

FIRST DISTRICT DENTAL SOCIETY OF ILLINOIS.

The First District Dental Society of Illinois held its annual meeting at Peoria September 8th and 9th, 1891. and it proved a very interesting and instructive one. Dr. H. H. Silliman, of Chenoa, read a paper on the "Devitalization and

Removal of Dental Pulp." Dr. W. A. Johnston, of Peoria, read an essay on "Pulpless Teeth." Dr. J. K. Moody, of Mendota, gave a valuable talk on "Hints on Operative dentistry."

Interesting clinics were given by the members of the society and others. The question box opened and discussed at the close of each session elicited many good thoughts.

Dr. E. K. Blair, of Waverly, was elected President; Dr. O. M. Daymude, Monmouth, Treasurer, and Dr. W. O. Butler, LaHarpe, Secretary.

Peoria was chosen as the place of meeting next year on the second Tuesday in September.

ANNIVERSARY MEETING FIRST DISTRICT DENTAL SOCIETY, N. Y.

The First District Dental Society will hold its usual great meeting early in January, 1892. Exact date will be announced shortly. The essayists engaged are all distinguished gentlemen, and discussions prepared in advance will be offered by men of equal prominence. The clinics will be managed on a novel plan. The committee has decided that quality must prevail rather than quantity. Nothing will be shown that has been seen before. Gentlemen who are willing to take part and who will be prepared to present a new method, medical agent or instruments, are cordially invited to communicate immediately with Dr. A. Roy, 148 W. 70 Street, N. Y. City, the chairman of clinic committee. Special arrangements will be made so as to enable all to see all the demonstrations. We anticipate that all the prominent men will be with us and all are invited to attend.

M. L. RHEIN,

GEO. H. WINKLER,

RODRIGUES OTTOLENGUI, Chairman Ex. Com.

Calcined magnesia as an intensifier of peroxide of hydrogen for bleaching purposes:—Five parts of calcined magnesia added to H_2O_2 of the usual strength bleaches more slowly, but its bleaching capacity is very much increased as may be seen by trying it on greasy or yellow cotton wool. "A word to the wise," will allow them to use it in pulpless teeth.

Do you sterilize the mouth glass after using it?

AQUA CHLOROFORMI.

Chloroform 1 part.

Water 2000 parts.

Dissolve. Keep protected from the light.

BOTOT'S TOOTH WASH.

Cloves, in loose powder 30 parts.

Ceylon cinnamon in loose powder 30 parts.

Anise, in loose powder 30 parts.

Cochineal, in loose powder 20 parts.

Alcohol 2000 parts.

Oil of peppermint 15 parts.

Macerate the solids with the alcohol during one week, frequently shaking. Filter, and in the filtrate dissolve the oil of peppermint. —*Ger. Pharm. Society.*

HIS LATIN DID THE JOB.

The medical staff attached to a well-known hospital encountered an amusing incident recently. A certain patient, who was a victim of paralysis, came to the

hospital for treatment. He was a fine Latin scholar, and with it all loved a good glass of liquor. He could not move his legs, but his stomach was in excellent condition, and every morning the sick man asked for just one cocktail. He was just as regularly refused by the physician, and finally the cocktail request got to be a standing joke. One morning the patient got a piece of paper and pencil and wrote the following prescription and sent it to the physicians :

R
 Sp. Frumenti.....2 oz.
 Tr. Angostura1 drachm.
 Sacch.
 Citri.....a. a.....q. s.
 Misc.
 Fiat gallicauda. JOHN SMITH, M. D.

To those who are not well versed in Latin it might be well to state that the prescription called for a first-class cocktail. The directions "gallicauda" mean "the tail of a cock," and "fiat" is imperative for make. When the physician read the prescription he consulted the rest of the staff, and as a result a thumping big cocktail was sent up to the sick man.—*Philadelphia Record*.

DENTAL ASEPSIS.

There is reason to suspect that Listerian-dogmas have not yet permeated the dental department of surgery, and that there is room for improvement in relation to the antiseptics of the instruments employed in the dental art. We do not go so far as to advocate the extraction of teeth under the carbolic spray, but there are undoubtedly some very tangible risks involved by negligence in this respect, foremost among which is the possibility of transmitting syphilis and blood-poisoning. The mouth is itself the perfect model of an incubator for the spores of bacteria, fulfilling all the requirements as to heat and moisture, besides providing suitable media for their development. The dentist therefore cannot be too scrupulously careful in providing for the freedom of his hand and of his instruments from "misplaced matter," *alias* dirt. Nothing is more likely to secure for him the confidence and esteem of patients than an ostentatious observance of the laws of surgical cleanliness. For this reason we are disposed to advise the methodical use of antiseptics. Not, indeed, that they are essential to cleanliness, but because the antiseptic method, when conscientiously carried out, ensures the purity which is indispensable for perfect safety. The best agent for the sterilization of instruments is probably boiling water, which promptly places any marauding microbes *hors de combat*. It has the premier advantage of being easy of application and of not damaging the steel. "Antiseptic dentistry" would make a good war cry, but unless all dentists practice this they will have fallen short of their mission.—*Exchange*.

EXPERIMENTS ON TRAP SIPHONAGE. APPENDIX II. NOTES ON THE VAPORIZATION OF MERCURY. BY DR. T. B. STILLMAN.

Mercury remains unchanged upon long shaking up with either air, hydrogen, nitrogen, or carbonic acid.—Gmelin-Kraut, *Anorganische Chemie*, Vol. III., page 741.

Mercury solidifies at -40 degrees C. At 662 degrees Fahr. it boils, and yields a transparent, colorless vapor of great density. The metal volatilizes, however,

to a sensible degree at all temperatures above 19 degrees or 21 degrees C. [66 degrees to 68 degrees Fahr.] ; *below this point its volatility is imperceptible*. Pure mercury is quite unalterable at common temperatures, but when heated near its boiling point it slowly absorbs oxygen and becomes converted into a dark-red powder.—*Fowne's Manual of Chemistry*.

Mercury retains its luster even on long exposure to ordinary air.—*Encyclopædia Britannica*.

Mercury is a brilliant, mobile liquid, which vaporizes slowly even at ordinary temperatures. Perfectly pure mercury undergoes no change in air or in oxygen gas at the ordinary temperatures, even when shaken about in the gas for a long while ; but if mercury containing traces of foreign metals, such, for example, as that ordinarily met with in commerce, be exposed to the air, a gray pulverulent coating will, after a while, appear on its surface. This coating is composed of oxides of the contaminating metals mixed with finely divided metallic mercury.—*Elliot & Storer*, page 571.

Mercury is the only fluid metal at ordinary temperatures. At 360 degrees C. it boils, and at a slightly higher temperature distills over, but is volatilized to some extent at all temperatures above its freezing point, as may be proved by suspending a piece of gold-leaf in the neck of a bottle containing a small amount of mercury.—*Chemical Technology*—*Wagner*, edited by Prof. Wm. R. Crookes, F. R. S.

This reaction requires several weeks for its performance, and the air must be enclosed, as follows :

Place at the bottom of a bottle some mercury, and suspend in the neck a bit of gold-leaf ; in a few weeks the lower portions of the gold will become white from the condensation of the vapor of mercury upon it.—*Chemical Physics*, *Miller*, page 371.

Mercury—permanent—unacted upon by water. In contact with aqueous solutions of the alkaline chlorides, and exposed to the air, mercury is attacked to a certain extent with formation of Hg Cl .—*Dictionary of Solubilities*, *Storer*, page 358.

The experience of M. Merget proves that mercury develops its vapor at ordinary temperatures, and that these vapors propagate themselves in the air.—*M. Regnault in Comptes Rendus* 73, page 1462.

Annales de Physique [3d serie, t. XI., 1844] contains an article upon the tension of the vapor of mercury at all temperatures from zero to 100 degrees C.

Also Regnault states, *Comptes Rendus* 73, page 1462—I admitted in the researches that the tension of mercury is nihil at the temperature of melting ice. This hypothesis is not absolutely correct. Mercury volatilizes itself sensibly at this temperature. This experience proves that at -13 degrees C. the vapor of mercury develops sufficiently to form an image on a daguerreotype with an exposure of twelve hours.

(a) The experiments of M. Merget simply confirms the statement that all liquids are more or less volatile at ordinary temperatures. The experiments were made with pure mercury and large surfaces of exposure. This latter is also a requisite for the effect of the vaporization of the metal upon the daguerreotype plate and the production of an image.

(b) In the process of evaporation the vapor of mercury is supplied from the upper or superficial layer of the liquid *metal* only, and as Miller [*Chem. Physics*, page 372] states. It is therefore evident that the extent of surface exposed must greatly influence the amount and rapidity of evaporation independently of the

temperature. Now if the evaporating surface be in any way protected, evaporation is entirely suspended.

(c) The protection afforded the McClellan vent by the coating of oxides, or other metals, &c., upon the surface of the mercury contained in it, would therefore prevent such evaporation as described, even if the latter were not confined to infinitesimal amounts. [See Elliott & Storer, quoted above.]

A very complete article upon the diffusion of the vapor of mercury will be found in *Compte Rendus*, vol. 73, pages 1356, '57, '58, '59, '61, by M. Merget, one of the conclusions being, that the phenomenon of the vaporization of mercury is continuous, which is only interrupted by the solidification of the metal. [The remarks, paragraphs (a) (b) (c), cover this extract.]

At 40 degrees C. it gives off a great volume of vapor which is made use of in the daguerreotype, etc., and even at ordinary temperatures, and even as low as -13 degrees C. it vaporizes, so that one must take precautions regarding this latter when in a room with a considerable quantity of mercury. *Lehrbuch der Chemie*, Graham Otto, Vol. II., page 1063. [The remarks, paragraphs (a) (b) (c), cover this extract.]

Mercury vapor shows an ordinary temperature appreciable tension. At 20 degrees C. the same is 0.0268 m. m.; at 100 degrees C. equals 0.5 m. m. Pure mercury remains unaltered in the air, etc. From *Neues Handwörterbuch der Chemie*, Fehling. 65th—*Lieferung*.

Watts' Dictionary of Chemistry states as follows: Mercury remains unaltered when agitated for any length of time in oxygen gas, air, etc., but any foreign metals mixed with it become oxidized, etc.

Karten, [Fogg. Ann, t. XXI.—245] states that mercury at temperatures below 0 degrees C. gives off sufficient vapor to bring out the image on a daguerreotype plate held over it. [The remarks, paragraphs (a) (b) (c), cover this extract.]

The conclusions to be drawn from the above references are as follows:

The fact that gold-leaf must be suspended in a narrow space over *pure* mercury for weeks before amalgamation by vaporization is effected, shows that the latter is infinitesimal in amount, and the rate imperceptible by ordinary means of observation. [See Wagner & Miller's statement.]

The experiments were made with the utmost delicacy upon *pure* mercury, and the results shown indicate that the greatest care and skill were necessary to detect (at ordinary temperatures) the vaporization.

The conditions are entirely altered; however, when the ordinary commercial mercury is used, since the latter contains traces of lead, copper, iron, etc., which produces a thin coating of oxides upon the surface of the metal, preventing any tendency to vaporization. Not only is this true at ordinary temperatures, but it continues up to the boiling point of the metal, so that the boiling point of the commercial metal is very much higher than that of pure mercury. Pure mercury is not available for ordinary use, as its preparation requires processes which increase its cost about 30 per cent above that of commercial mercury. Assuming therefore, that the McClellan vents are to use commercial mercury, the latter impurities will protect it against loss by vaporization, even to the infinitesimal extent to which the statements in chemical treatises really apply, for ordinary temperatures.—*Transactions of the American Public Health Association*.

THE DENTAL REVIEW.

VOL. V.

CHICAGO, DECEMBER 15, 1891.

No. 12.

ORIGINAL COMMUNICATIONS.

THE STANDARD OF PRELIMINARY EDUCATION THAT SHOULD BE INSISTED UPON.*

BY CHAS. J. MERRIMAN, D. D. S., CHICAGO, ILL.

Had the title of this article been "The standard of preliminary education that would be desirable," much more might be thought of and mentioned as comprising the intellectual equipment of the pupil about to enter upon his professional study, but since the title reads as it does, it forces us to consider only such accomplishments as seem essential to his success at the very start.

Considering the brief course of instructions in our dental colleges, even on the present three year plan, much valuable time appears to be wasted in many cases where matriculants are not prepared, by rigid school discipline in habits of study and close concentration of thought for a complete and thorough grasping of the scientific subjects into which they are compelled to plunge during the first year.

Here, at least, a trained mind counts for more than a trained hand. The statement has been made by one in charge of a special department in one of our dental schools in Chicago that the greatest difficulty in bringing a class to a uniform degree of proficiency lies in the fact that their preliminary training has been so totally dissimilar. It seems to be a question of former environment. One student, we will say, has just emerged from some high school or other literary institution, and though coming with a mind charged with a number of abstract facts, knows really nothing as his theory is as yet unseasoned by experience. Others after quitting their

*Read before the Odontographic Society of Chicago, October 1, 1891.

tasks in school have spent a number of years on farms, or in the mercantile pursuits of various kinds, and having allowed their minds to go to weeds, find it difficult to learn anything from the lectures. This might indicate the necessity of establishing a preparatory school in which such men could receive a uniform training which would show good results in the present method of class teaching.

The standard that should be insisted upon in our opinion would be of such a character that a written examination would be considered only a partial test of eligibility, to be credited for what it is worth and no more.

A private interview with the Dean of the faculty, in which some knowledge of the candidate's general intelligence, good sense, former occupation, age, moral attributes, personal motives and reasons for his determining on the study of dentistry, would assist in deciding as to the natural fitness of the applicant and could be supplementary to the written examination.

As to the latter test the present requirements as published in the college announcements, include simply a good English education, which is rather indefinite as this might mean a thorough elementary schooling or it might extend to higher mathematics and natural sciences. One college is more explicit and indicates one of the following subjects at the option of the candidate, viz: Latin, German or Physics.

We think a knowledge of the general principles of physics should be obligatory, as none of the natural sciences has so much to do with the various phenomena which are presented in the study and treatment of diseased teeth.

The other branches as laid down in the announcements seem comprehensive enough if only a rigid examination on them be held. A thorough mastery of the essentials taken with a well trained memory, means a better mind for future good than a more extensive but uncertain knowledge.

THE DESTRUCTION AND REMOVAL OF PULPS OF TEETH AND THE FILLING OF ROOT CANALS.*

By T. A. BROADBENT, M. S., D. D. S., CHICAGO, ILL.

There is perhaps no subject pertaining to dentistry upon which so much has been said and written the past few years as the sub-

*Read before the Odontographic Society of Chicago, Nov. 9, 1891.

ject which I bring before you for your consideration this evening; and it is entirely fitting and proper that this subject should be frequently studied and discussed, as there is no part of dentistry that requires greater skill and care to properly perform. And yet, notwithstanding the fact that so many papers have been presented to dental societies throughout the country, and so many articles published in dental journals, we still find a great diversity of methods used and advocated by the leading members of the profession. In fact, it is the exception for prominent men to agree in the methods employed in the destruction and removal of pulps of teeth and filling root canals.

I do not propose or expect to introduce any new method or original ideas on this subject. I shall however attempt a description of some of the leading methods used, giving my reasons for condemning some and upholding others. It is not within the province of this brief paper to give a histological description of the pulp, an anatomical description of root canals or the chemical and therapeutical action of drugs used. I shall therefore proceed at once to a description of methods of destroying pulps.

There are several methods in use at the present time, but I hold that two or possibly three methods will cover all cases. In some cases where the pulp has been exposed by accident, and the crown of the tooth so broken away that it is difficult to retain treatment, the method of driving the pulp out with wood, properly medicated, is advocated by some prominent dentists, although the custom has not been generally adopted for a very important reason, viz: shock, which is likely to occur in all cases in a greater or less degree, and the severity of which cannot be predetermined. If this method were successful in all other respects this one feature is sufficient for its condemnation, and I would substitute in its stead the almost painless method of removing the pulp en mass by the use of crystals of hydrochlorate of cocaine.

The case is supposed to be one where the pulp has been recently exposed, but previous to exposure was in a healthy normal condition. Partially dry the exposed portion of the pulp and apply a few crystals of cocaine to the surface. Let this remain till dissolved; in about five minutes after the cocaine is thoroughly dissolved, puncture the pulp, which can be done without causing pain, and allow it to bleed freely. After hæmorrhage has ceased apply more of the cocaine crystals. Repeat

the process two or three times and in about fifteen minutes a barbed broach may be carefully passed to the apex of the root, given a few turns and removed with the pulp en mass and with very little or no pain to the patient. This method I have taken from the DENTAL REVIEW published some months ago, and have used it with success several times and I can heartily recommend it.

The most universal method of destroying pulps in use at the present time, is by the application of arsenious acid in combination with morphia or cocaine and some one of the essential oils, or lanoline. The following formula recommended by Dr. A. W. Harlan, I have found very efficient.

R Acidi Arseniosi, 3 1
 Cocaine Hydrochlorate, 3 2
 Lanoline, ad. q. s. to make stiff paste.

This preparation should never be applied to a congested or aching pulp. In all cases where it is possible apply the rubber dam. In fact, in all operations on the pulp or canal it is understood that the dam, if possible, be adjusted. Remove the debris and soft decay, freely expose and puncture the pulp. After hæmorrhage has ceased carefully wash the cavity with tepid water and apply a local anæsthetic (Black's one, two, three for example,) and place over it a pledget of cotton moistened with sandarac varnish. Allow this to remain a few hours or possibly until the following day. When the patient returns remove the treatment, apply one-fortieth of a grain of arsenic paste, place over it a small pledget of cotton. For retaining the treatment use oxyphosphate or oxychloride of zinc or gutta-percha as the case may indicate. In a large majority of cases however the cements are preferable as they can be more readily applied without producing pressure which should always be avoided. In a majority of cases where the patient experiences severe pain during the devitalization of a pulp by the use of arsenic, the pain is caused by pressure and not by the action of the arsenic. Allow the arsenic to remain twenty-four hours if the patient is under twenty years of age; and from two to four days if older. Remove and open the pulp chamber freely, place thereon a solution of tannin in glycerine, seal with gutta-percha which should be punctured with a small warm instrument, and allow to remain from eight to ten days, after which the pulp may be removed with very little or no pain.

Before attempting to remove any pulp thorough and convenient access should be obtained. In many cases this can be accomplished only at the sacrifice of a goodly portion of tooth structure. After the pulp chamber has been freely opened, the pulp can, in a majority of cases, be removed en mass by introducing a small barbed broach to the apex of the root (and great care should be taken to avoid going beyond) and giving it a few turns, the same as in the previously described case. The pulp becomes entangled in the barbs and dissolution having not sufficiently advanced to destroy its texture, it naturally gives way at its weakest point, which is at the apical foramen. After removing the pulp, dry carefully by introducing a few fibers of cotton on a smooth broach. Then introduce a cone of cotton saturated with some one of the essential oils, seal and allow to remain from one to three days, after which remove, dry the canal as thoroughly as possible by using absorbent cotton. Follow this with blasts of hot air, and finally to remove any moisture that may remain, use some root canal dryer (preferably Woolley's) and be positive that every particle of moisture has been removed. Too much emphasis cannot be placed on the necessity of thoroughly drying root canals previous to filling as by so doing we are not only insured of a more perfect filling, but by the use of heat the canal is completely sterilized. When the canal is thoroughly dried, in an antiseptic condition and convenient access is obtained, it is ready for filling.

In a large majority of cases the best material to be employed for filling root canals is chloro-percha and gutta-percha. The chloro-percha should be the consistency of cream, and for its introduction into the canal a fine, smooth broach wrapped with a few fibers of cotton is used. The cotton fibers should be so securely wrapped to the broach that they will not be removed in passing into the canal. With this pump the chloro-percha to the apex of the root, being careful not to force it through the apical foramen as the chloroform is exceedingly irritating to the peridental membrane, and will cause extreme pain if brought in contact with it. When the canal is well filled with chloro-percha, introduce a gutta-percha cone into it, forcing the cone as near the apex as possible. This may be best accomplished by first forcing a short cone well to the apex by using an instrument prepared for that purpose, and following it with another cone somewhat larger. In this way the cone is more likely to be introduced well into the canal and not double upon itself as might

be the case if a cone long enough to fill the entire canal were used. The gutta-percha displaces the chloro-percha and forces it into all irregularities, cracks and abnormally large tubuli, making a more perfect filling than can be made with any solid substance or the cements.

In cases where the apical foramen is abnormally large, or where for lack of time or any other reason the canal may not have been thoroughly disinfected, Hill's stopping moistened with oil of eucalyptus is, I have found, a very excellent filling material. The stopping should be used in shape of cones, their size being determined by the size of the canal to be filled.

After the canal has been prepared the same as for filling with chloro-percha moisten it with the eucalyptus, warm the cone and dip it in the eucalyptus and introduce to the apex by means of root canal pluggers. This filling is of course very similar to a chloro-percha filling with the exception of the therapeutical effect of the eucalyptus.

I have very little faith in the practice of filling canals, which are too small to fill with chloro-percha, with gold, tin or other metallic points, for the reason that it is impossible to make a perfect filling by their use, and if the canal would cause trouble if left without a filling it certainly would do so filled with the metallic points. However, in cases where it is possible to introduce the chloro-percha on a fine broach and the canal is so small that a gutta-percha point cannot be introduced, the filling will be made more perfect and complete by the use of a small gold or tin point introduced in the same manner as the gutta-percha.

I do not advocate immediate root filling, that is removing a pulp, or disinfecting a pulpless tooth, and filling at the same sitting. I believe that every root canal should be thoroughly disinfected which can only be accomplished by allowing the drug to remain sufficiently long in the tooth to thoroughly penetrate the tubuli of the dentine. The practice of enlarging root canals for filling should also be condemned for two reasons, first the great danger of penetrating the sides or the apex of the tooth as it is necessary where the canal is enlarged to approach very near the apex; for in 90 per cent of cases the filling will not reach beyond the point of enlargement. Secondly, it is impossible to obtain as smooth and polished a surface for filling as nature has prepared for us.

In conclusion, let me urge upon you the necessity of being scrupulously careful in the destruction of the pulps of teeth and equally thorough in their removal and the filling of the canals which they occupied.

RELATIVE CONDUCTIVITY OF HEAT BY FILLING MATERIALS.*

BY THOS. L. GILMER, M. D., D. D. S., CHICAGO, ILL.

Not being wholly satisfied with the methods heretofore employed to determine the relative conductivity of filling materials, I have devoted much time and labor to making tests of those most usually employed, namely: Gutta-percha, oxychloride of zinc, oxyphosphate of zinc, copper and ordinary amalgam, and gold. In the tests of gutta-percha the common pink variety was used. The oxychloride tested was Smith's; the oxyphosphate Justi's insoluble; the ordinary amalgam Lawrence's; and the copper amalgam Ames'. The gold tested was Edward Rowan's gold cylinders. This is a gold that is very easily packed into a solid mass.

The literature on the subject is limited; works on physics give the heat conducting power of metals and other substances, but do not give the heat conducting power of metals in the forms used for filling teeth. Nor do they give the conducting power of gutta-percha, oxyphosphate of zinc, or oxychloride of zinc, three substances much employed in dentistry.

The only tests to which reference will be made, other than my own, are those made, by Dr. C. Edmund Kells, of New Orleans, reported at the union meeting of the American and Southern Dental Associations at Louisville in 1888.

The method employed by Dr. Kells was very ingenious, and was well received by most of the members of the associations. Several of you were present at that meeting and doubtless remember the results of his experiments; however, it will not be amiss to review his plan.

In a circuit between a battery and an electric bell is placed a thermostat. "The thermostat consists of a zinc disk, slightly concave, held rigidly at its edges in a hard rubber base. Through the back of the base and in its center is fixed a finely threaded screw, to the head of which is attached a lever to admit of its delicate adjustment. The zinc disk and the adjustable screw are placed in the

*Read before the Odontological Society of Chicago.

"circuit" with the battery and bell, and if the screw is turned down until it impinges upon the back of the disk the electric current will be completed and the bell will ring. By giving the screw a portion of a turn to the left its contact with the disk is broken, the circuit is broken, and the ringing ceases. If heat be applied to the disk, it follows the natural laws and expands. However, being rigidly confined at its edges, it cannot expand laterally, and in consequence it must bulge toward the screw. Upon the withdrawal of the heat it contracts to its former position." He adjusts the screw so that it does not quite touch the disk. By dropping on the disk a single drop of warm water the disk expands making contact, and the bell rings. He then places on the disk successively, cells of the same size composed of amalgam, gold, gutta-percha, oxyphosphate of zinc, oxychloride of zinc and other materials. As each cell is placed on the disk, in it is put a small amount of water heated to 140° , when the heat from the water is conducted to the zinc disk the bell rings; the time between the placing of the water in the cells and the ringing of the bell is noted. Then removing the cell tested and repeating the operation with a cell of another substance, noting the time again, the difference in the time now elapsing before the ringing of the bell in comparison with the time required in the previous tests, indicates the difference in conducting power of the substances tested.

According to these tests there was but little difference between the conductivity of the two zinc preparations and the metals. This is not in harmony with the general opinion of dentists, as both preparations of zinc have been very generally used in teeth as non-conductors.

It seemed to me at the time that the delicacy of the test was so great that there was an opportunity for error.

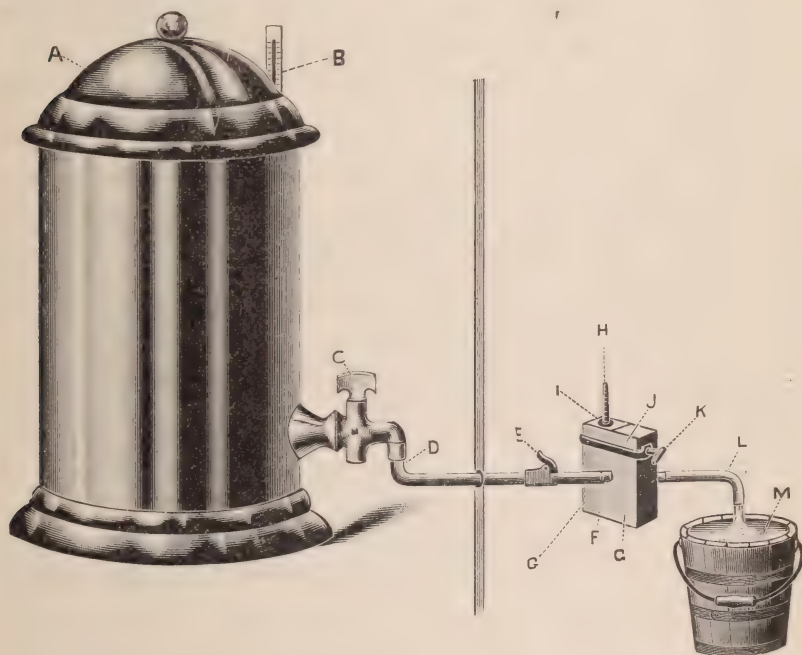
The tests I have made have been repeated sufficiently often with similar results to lead me to believe that if there is an error in the positions given the different materials as conductors, it is a fault of method and not of procedure.

The method employed was developed from one of the modes used by Prof. John M. Ordway, * to determine the nonconducting quality of the various steam pipe coverings.

In the first place it was necessary to form the various materials to be tested, into shapes as nearly identical as possible.

* Formerly of Boston School of Technology. now of Tulane University.

The form chosen was a hollow cylinder, one inch in length, one-fourth of an inch in diameter, the bore of the cylinder being one-eighth of an inch. This gave material one-sixteenth of an inch between the outer and inner circumference, approximating the average thickness of nonconductors used under fillings; and perhaps not very much below the average thickness of filling material in approximal and buccal cavities of bicuspid having live pulps; also in labial cavities of the six anterior teeth. To form these cylinders I used a glass tube, in the center of which passing throughout its length was secured a glass rod, and around this packed the materials tested.



The drawing here presented will aid in understanding the procedure.

A, represents a five gallon tank; b, is a thermometer to measure the temperature of the water which the tank contains; c, is a stop-cock through which the water flows to the rubber tubing, d; e, is a second stop which permits the turning on and off of the water in the testing room; f, is the connection of the tubing d with the hollow cylinder which is to be tested; g—g, are two blocks of wood

accurately fitted to each other, through which a hole is bored just large enough to admit the cylinder, one-half the bore being in each of the blocks; h, is a thermometer which touches the cylinder, the bulb passing one-half its length below the cylinder. Its side is held directly in contact with the cylinder by the adjustment of a cork packing, i; j, is a clamp which by means of the set screw k holds the blocks of wood tightly together; l, is a rubber tube to convey the water to the vessel, m.

Lest the chilling of the tubes by the water should also change the temperature of the blocks of wood, rendering all the tests uncertain except the first one; I made blocks for each material, and with each test, used the same thermometer. The testing apparatus, excepting the water tank, which was in an adjoining hall, was placed in a room the temperature of which was raised to and maintained at 96°; approximating as nearly as convenient the temperature of the mouth. The water in the tank was chilled by ice to 34°. One of the cylinders was then put in place and the testing thermometer adjusted. The rubber tubing was now connected and the water turned on, flowing through the tubing to the cylinder and out into the waste bucket. At the moment when the water was turned on I started a stop watch. When the thermometer indicated a fall of four degrees the watch was stopped, the time noted, and another block and cylinder was put in place. In each case the thermometer was removed and allowed to rise in temperature until 96° was reached, when it was put in place in another block and the operation repeated with another material, and so on until all the tests were made.

The results obtained by these tests placed the conductivity of the different materials in the following order, 1,000 representing the best conductor :

Gold	1,000.
Lawrence Amalgam.....	852.5
Copper Amalgam.....	702.7
Oxyphosphate of Zinc.....	584.27
Oxychloride of Zinc.....	525.25
Gutta-percha.....	520.

A test of the conducting qualities of alloys presents curious results. For instance, if one per cent of silver, which is represented as a conductor by 1,000, be added to gold, the conducting quality of

the alloy is changed from 980, which gold alone gives, to 840. If two metals be combined, one being the best known conductor and the other the poorest, the latter predominating, the conducting quality of the alloy formed is no better than if it did not contain a particle of the better conductor.

Works on physics give the conducting quality of the various metals used in dentistry, previous to their being transformed into shape suitable for filling materials, as follows, 1,000 representing the best conductor:

Silver.....	1,000.
Gold.....	981.
Copper rolled.....	845.
“ cast.....	811.
Tin.....	422.
Platinum.....	380.

AFFECTIONS OF THE SALIVARY GLANDS AND THE TISSUES IN CLOSE PROXIMITY TO THEM.*

BY TRUMAN W. BROPHY, M. D., D. D. S., CHICAGO, ILL.

The existence of tumefactions of the tissues in the region of, and those which form, the oral cavity are so frequently associated with or due to dental lesions that errors in diagnosis are sometimes made when these morbid conditions have origin from other causes.

As dentists we have become so accustomed to facial swellings induced by pericementitis, periostitis and alveolar dental abscesses that the first impression formed when we come in the presence of a patient thus affected, is that a diseased tooth is the exciting cause.

It is, indeed, quite true that morbid changes in the region of the maxillary bone are due principally, to diseases of the teeth, and it is also true that these tissues are often subject to pathological changes absolutely independent of the teeth; yet the objective signs manifested in many of these cases are such that the most experienced diagnosticians do not hesitate to admit that tumors, and swellings which are not tumors, about the face, simulate abnormal conditions of dental origin.

Swellings in the parotid region, due to a third molar tooth

*Read before the Chicago Dental Society.

whose crown is not wholly erupted and around which is inflammation and possibly suppuration, resembles to a very marked degree on ocular examination, parotitis or mumps, and the swellings of parotitis have not infrequently been attributed to the teeth.

The anatomical relation of the mouth to the antrum and the salivary and lymphatic glands is such that diseases of these parts require the employment of every means at our command to make correct diagnosis.

The diseases of the salivary glands I believe are far more frequent than is generally realized.

When we reflect upon the work performed by these glands, their great activity, and the importance of their secretion as an adjunct to the function of mastication, deglutition and digestion, it is quite apparent that a departure from health of these glands must operate to the detriment of the entire organism.

The literature on the subject of diseases of the salivary glands is limited chiefly to traumatism and parotitis. Other affections are mentioned but briefly.

Foreign bodies in Wharton's and Steno's ducts, strictures of these ducts from continuity of surface with inflamed oral mucous membrane and the consequent injuries to the glands, the remedial agents, both surgical and medicinal, employed in their treatment, are subjects I desire to bring before you this evening for discussion.

It is unnecessary to review the anatomy of the salivary glands more than to say that they are in close relation with most important structures and that disturbances of their function may lead to serious consequences.

Obstruction of a salivary duct quickly manifests itself by distension of the gland from which the duct leads, followed by pain. More especially is this the case with the parotid gland, whose grape-like lobes fill to their utmost with their secretions, and then the strong, fibrous sheath which incloses it makes further distension difficult, hence the pain.

Stoppage of the salivary ducts may be due to strictures following inflammation of the gland or stomatitis from any cause.

Salivary calculus is not infrequently deposited within the ducts and thereby prevents the evacuation of the glands. These calculi may vary in size from a pin's head to a hickory nut. A careful examination of them may reveal the presence of a small

seed which had made its way into the duct and had served as a nucleus, around which the phosphate of calcium formed.

Calculi are sometimes found in the substance of the glands, but far more frequently in the ducts.

Salivary calculi may obstruct the ducts by forming in them, and by arresting the egress of the saliva from the gland, establish inflammation of the glandular substance and terminate in salivary fistula or suppuration. Deposits of salivary calculus upon the inferior incisor teeth may be so extensive as to occupy a great part of the space beneath the tongue and Whartons and Rivinians ducts may be closed in consequence of inflammation and adhesions established by contact with these deposits.

Closure of the salivary ducts may be due to strictures anywhere along their tract. These strictures may be the sequelæ of parotitis, the eruptive fevers or stomatitis.

DIAGNOSIS.

Examinations of the mouth should be made in a strong light.

If a salivary duct be closed and the gland enlarged and diseased the condition may be recognized by the phenomena presented, and by digital examination.

The mucous membrane should be dried by means of lint and a close inspection made of the orifice of the duct. A small silver probe should be employed and introduced into the duct, when calculi will be discovered if present. One forefinger placed in the mouth and the other manipulated over it outside of the cheek will often enable the operator to detect calculi.

Small calculi may be removed from the orifices of the ducts in favorable cases but more frequently they must be removed through incisions which should always be made within the mouth.

Strictures of the ducts from inflammatory adhesions are to be treated by dilating them by the use of graded silver probes.

Setons may be advantageously employed for the purpose of drainage when the function of Whartons and Rivinians ducts cannot be reëstablished. What serves the purpose better is a soft, flexible silver perforated tube passed through the tissues and bent around so that one end will telescope over the other and form a ring. This perforated ring will serve as a means of drainage, besides it is free from the objections of the seton; it does not irritate the tissues when properly inserted.

Ranula has been so long confounded with dilation of the sublingual gland from stoppage of its duct, that many are of the opinion that the soft, bluish fluctuating enlargements beneath the tongue is the dilated gland.

The fluid which forms ranula is found in areolar spaces and bursa between the genio hyo glossi muscles. Ranula is best treated by inserting the perforated silver ring.

Inflammation of the salivary glands should be treated on general principles ; hot fomentations to the parts, aperients when required, and rest.

Suppuration of these glands is not of frequent occurrence. The discharge of pus from the duct of Steno is by no means positive evidence that the parotid gland is suppurating. More frequently the pus comes from the lymphatics which lie about the base of the gland and within its sheath, finds its way quite readily into the duct of Steno and thus makes its escape. Chronic lymphatic abscesses may exist in this region a long time without exciting anxiety on the part of the patient, or even attracting his attention beyond a puffing up of the face at the location of the abscess. This puffing is usually observed on rising in the morning. A little pressure upon the swelling will evacuate the pus cavity and no inconvenience seems to be experienced during the day.

The causes of these abscesses are the same as those which produce enlargements and abscesses of lymphatic glands in other parts of the body. And the affections are often aggravated by the stoppage of Steno's duct.

I have previously stated that disease of the parotid gland may be due to an arrest of the flow of saliva from stoppage of the duct of Steno. The lymphatic glands so quickly sympathize with neighboring tissues subject to inflammation that they too take on inflammation owing to continuity of surface with the parotid, and it is unnecessary to say that the lymphatics are more prone to suppurate than the parotid gland. The treatment of these lymphatic abscesses situated at the base of the parotid gland should be pursued with great care to avoid disturbances of the delicate glandular structure of the parotid. After dilating the ducts a syringe with a long silver point may be used and a solution of boracic acid in warm water carried into the duct and the cavity thus cleansed.

Peroxide of oxygen should *never* be carried into these cavities until all pus and blood, if any there be, has been removed.

Peroxide of hydrogen should never be carried into any cavity which is filled with pus or blood. Such cavities should be evacuated by irrigating them with warm boracic or carbolized water, after which peroxide of hydrogen applied serves a most important part in oxidizing and removing septic matter which may cling to the walls of the cavity.

The prognosis of these abscesses is favorable. General medication should not be neglected. Alteratives and tonics are indicated in conjunction with local treatment.

THE CERVICAL BORDER*

BY GEO. J. DENNIS, M. D., D. D. S., CHICAGO, ILL.

The subject presented is no new one. Its history is coincident with that of the profession of dentistry. With the subjects of alveolar abscess, pyorrhœa alveolaris, and others of equally interesting character, it has held its own in the amount and in the endless variety of the discussions it has aroused. It is not, therefore, with expectation of presenting any new thoughts on this subject that it is brought before you, but that it shall, possibly, lead toward more perfect results in the treatment of this important locality of the oral cavity, where so many admitted failures are found, even when our best energies are exercised in its behalf.

The difficulties of position, of access, the various points of weakness, due to tooth structure, as well as to the organization of the individual, and the comparative inadaptability of the filling materials in use, are matters which concern every member of the profession.

The structures entering into the composition of a tooth at this point where we are called upon to shape this border, vary according to the extent and situation of the lesion of decay. Some one of the hard tissues of the tooth enamel, dentine or cementum must enter into its formation. Any two of these structures may constitute a portion of it, but we are most often called upon to deal with one alone. The one most often affecting our treatment is enamel. While it is the one structural element best calculated to withstand mechanical forces and attacks of decay, yet it has peculiar properties which render it exceedingly difficult of manipulation. It is

* Read before Odontographic Society, at Commercial Hotel, Chicago, Oct. 12, 1891.

hard and dense, at the same time friable, the friableness increasing under the influence of the various agents of decay. Its structure, microscopically considered, is that of a substance composed of rods somewhat prismatic in shape, united by a cement substance which binds the whole number of enamel rods together. The arrangement of these rods is always in a direction perpendicular to the surface of the dentine in all its curves, a condition contributing to great power of resistance to mechanical force. Another beautiful arrangement of these rods is noticed; it is their deposition in lamellæ, one lamella after another being deposited, presenting a striated appearance which seems to indicate a cessation or diminution of the process of development for a period, after which it proceeds again with renewed activity. In the beginning these lamellæ are deposited on the cusps of the dentine, the surface covered with enamel gradually increasing until, as the process extends toward the neck of the tooth, a series of independent lamellæ are formed, overlapping those of the cusp. Proceeding further toward the neck, the number of lamellæ gradually diminishes until only a single lamella remains, which becomes itself gradually thinned until only a very thin covering of enamel remains, overlapped by a prolongation of the cementum, which thus protects in a great measure the thin enamel edge by its superior toughness and less friability. The cement substance found between the rods is of considerable less density than the rods themselves. It is found to differ in quantity in teeth of different densities, and this fact, combined with that of the amount of seeming compression of the enamel rods, has been utilized by observers in accounting for the difference in density noticed in enamel of teeth.

This, then, is the structure with which we have to deal principally. Could there be no disease, no fault of structure, no failure in the organization of the materials entering into the composition of this peculiar covering, with no abnormal conditions of the saliva,—decay of the teeth and its attendant consequences would hardly be brought before us for discussion.

We find, however, no such absolute perfection of arrangement of enamel cells. They are found contorted, arranged oftentimes in directions contrary to the line of greatest resistance, the cement substance greatly in excess, the lime salts of the rods themselves improperly organized, large interspaces resembling the lacunæ of bone being seen, as well as cracks, fissures and pigmented spots—all indicative of impaired resistance. These difficulties, attended

usually with a vitiated state of the fluids of the mouth, present themselves to us, and tend to frustrate our best efforts toward success in the prevention of decay at the cervical border.

Every dentist knows the requirements in preparing a relatively perfect border on the approximal or other surface of a tooth near its neck; the removal of decay and softened dentine; the necessity of cutting away any portions of the tooth which shall prevent free access; the removal of pigmented enamel; the obliteration of cracks, fissures, and white, chalky lines—until the border presents a beveled or square surface, where there shall be no frail, unsupported edges cut off from nutrition, with an unbroken, translucent appearance; all adjoining external surfaces polished, and, where possible, supporting the thin enamel edge with a portion of dentine.

When all this has been completed there is a certain feeling of satisfaction, which finds a definite expression. Yet under what seems to us perfect conditions in the preparation of this border, we find it in future years roughened and sadly disintegrated.

What is the cause of failure? We must recognize, first of all, the structural weakness of the materials with which we deal. It is a substance exceedingly brittle, transformed in a great degree from an indicated normal condition; composed not of a homogeneous mass, but of intensely hard rods, interlaced by a substance of very different density; a resisting power against mechanical forces, formed by a combination of arches, destroyed on account of the removal of a portion of those arches, and a resistance to side strain, lessened by the lack of support of adjacent enamel rods at points most needed in the maintenance of this border. A faulty manipulation of filling materials is noted, as in gold filling, where the blows of the mallet fracture the thin edge of enamel, or scale it off altogether. In the use of plastic materials, as well as in that of gold, neglect in the preservation of a reasonable continuity of surface, by which masses of the filling are allowed to overhang a possibly strong border, is one of the most important causes of failure, and in a majority of cases, failure may be traced to this one causative feature.

Finally, when all these causes of failure are eliminated, we are still compelled to acknowledge that the perfection attained, even with our best labors, is only relative and not absolute. Under the conditions given us, a perfect border cannot be formed, nor a per-

fect joint be made. A smooth surface can never be produced on any substance whose component parts are of differing densities, no matter how minute these parts may be. The denser portion will project beyond that which has less density, resulting in an uneven surface. This is true of enamel, composed as it is of substances of different densities, and whatever the apparent perfection or smoothness of a border may be, there will still exist an uneven surface, to the inequalities of which the filling materials at our command cannot be made to conform perfectly. Interspaces will exist, most minute, certainly, but to the fact that they do exist a powerful magnifying glass abundantly testifies, to say nothing of the spaces which the microscope will reveal. Where a space (however minute it may be) exists between a filling and its border, a capillary force will become active in the presence of a liquid, and a gradual passage of that liquid between the two surfaces will result. If, then, decay of the teeth is caused by external agents in the fluids of the mouth, it is manifestly impossible to exclude those agents and to prevent their action on the tooth at the borders of cavity, and especially at the cervical borders, where these influences are more constantly present. No joint can be made so perfect in this situation that moisture can be absolutely excluded.

No substance or combination of substances can be stronger than its weakest point. This we find strikingly exemplified in our dealings with tooth structure at the borders of our fillings, and in a still greater degree at the cervical borders, where support and nutrition are most often cut off; where the protective covering of enamel is thinnest; where it is more apt to be fractured; and where fillings are most liable to imperfection.

Our success in dealing with these borders, as with any other ones, can only be relative and not absolute. This fact must be recognized. It should be no justification for imperfect work, however, but rather should be a stimulus to us in our endeavors after the greatest benefits for our patients, knowing as we do the limits of even our best effort.

GUTTA-PERCHA AS A FILLING FOR ROOT CANALS.*

BY LOUIS OTTOFY, D. D. S., CHICAGO.

No one will question the fact that the subject of root filling is an intensely interesting one to every practicing dentist, and none

*Read before the First International Dental Congress, Paris, 1889.

underrate the importance of accomplishing the operation perfectly.

It is not the design of this paper to discourage the use of materials which yield successful results in the hands of some operators, but to correct the erroneous impressions prevalent among many as to the now commonly used gutta-percha; to set the advantages of this material in the proper light before the profession. It is not unfrequently that we find opportunities to hear some of the most prominent members of the dental profession proclaim before dental societies, or through the medium of dental journals, that chloro-percha is unfit as a filling material for root canals because it shrinks.

This philosophical judgment seems sound, because logically there must be shrinkage. We have in question two materials; namely, gutta-percha and chloroform. After the root is filled and the chloroform evaporated we have but one material left, namely gutta-percha; ergo: chloroform having escaped we have now gutta-percha minus chloroform, consequently shrinkage. The following questions seem therefore proper:

1. Does the chloroform escape during manipulation?
2. Is the shrinkage consequent on using dilute chloro-percha sufficient in extent to make a leaky root filling?

Pure gutta-percha is not employed to any extent in the arts and sciences. Generally, to be of practical value, it is mixed with different salts and earths. Perhaps the most notable instance of its use in a pure state lies in its application as a coating for ocean cables. Layers $\frac{1}{8}$ of an inch in thickness of the purest of gutta-percha are used. For dental purposes it is mixed with zinc oxide, and colored. A sufficient quantity of zinc oxide is added to secure the desired stiffness.

The addition of the zinc oxide (sometimes referred to as an adulteration) in reality adds to the value of gutta-percha as a root filling. This salt is, in a measure, a preserver, and by its addition the gutta-percha acquires a quality to which—probably—is largely due the indestructibility of the dental gutta-percha when employed the mouth. While the mixture of various ingredients with gutta-percha lessens the latter's nonconductivity, it does not materially affect it as a root filling. By experiments it has been proven that even with the addition of zinc oxide gutta-percha is yet the best nonconductor used in the mouths of patients.

Gutta-percha possesses the following advantages when used as a root filling:

- a.* It permits of the most perfect adaptation to the walls of root canals, of any material used for root filling.
- b.* Facility of manipulation and introduction; there is no material as easily introduced.
- c.* It will pass into inaccessible or minute portions of root canals by capillary attraction.
- d.* Indestructibility; in these positions it is impossible of any material deterioration or destruction.
- e.* Sealing of the entrances into the dentinal tubuli when used in connection with eucalyptol.
- f.* The tissues heal kindly about gutta-percha which may have passed through enlarged apices of roots.
- g.* Absence of any material shrinkage.

It is readily admitted that so soft and pliable a material must enter all the crevices and fine passages of root canals and pulp chambers. Especially if these channels have first been moistened with a fluid in which gutta-percha is either entirely or partially soluble, or by which it is at least softened. If the gutta-percha is, at the time of introduction, subject to outside pressure, it will pass into any space where any other kind of root filling can be made to enter. The general use of gutta-percha is a proof of its ease of manipulation; while when root canals are moistened with eucalyptol, the gutta-percha even more readily penetrates, without being pressed, by mere capillary attraction into inaccessible or tortuous canals. Its permanency and stability has never been questioned, and the importance of sealing the ends of the dentinal tubuli has been mentioned and considered advantageous by observers. Practice has demonstrated that living tissues tolerate with perfect ease the presence of gutta-percha. When abscessed teeth are filled in a manner to cause the appearance of the gutta-percha at the opening in the gum, no unpleasant after-effects follow, the particles of gutta-percha are gradually thrown out, and—possibly—the root apex becomes encysted.

Many dentists have condemned the use of gutta-percha because of its shrinkage when used in connection with chloroform; this has been done empirically and without a full understanding of the operation and of the principles involved. The philosopher-dentist

positively claims that shrinkage takes place ; and he is right, according to the following problem :

If a man shoots at six ducks, killing four, how many will remain ?
Theoretically, two ; practically, none.

If a dentist fills a root, with chloro-percha, is there shrinkage ?
Theoretically, some ; practically none.

In the former case the ducks, while in the latter the chloroform disappear during the shooting and filling respectively.

To ascertain the exact amount of shrinkage, I have undertaken to determine the quantity of chloroform employed in the filling of the root canals of the various human teeth. It was found that gm. 1.6 of gutta-percha required gm. 1.0 of chloroform to make a solution of the consistency generally employed by dentists for this purpose. Of this solution the following quantities are required to fill the respective roots :

Superior central incisor root.....	0.06.
Superior lateral incisor root.....	0.05.
Superior cuspid root.....	0.08.
Superior first bicuspid (two roots).....	0.07.
Superior second bicuspid root.....	0.06.
Superior first molar { palatal root.....0.04 { anterior buccal root..0.02 { posterior buccal root.0.01	...0.07.
Inferior first molar { anterior root.....0.03 { posterior root.....0.04	..0.07.

The teeth selected for the purpose of these experiments were unusually large and were filled *full* of the liquid chloro-percha. We find that the roots of the various teeth require from 0.01 to 0.08 of chloro-percha; (about $\frac{1}{4}$ to $1\frac{1}{4}$ grains;) the largest amount of shrinkage, therefore, possible, in any one root, would be the result of the evaporation of 0.03 chloroform; $\frac{3}{100}$ of a grain; were it used in a large canal of a cuspid and in a manner never recommended by even the most pronounced advocates of the use of gutta-percha.

It should be remembered that nearly, if not all, of the chloroform evaporates during manipulation; that either wood, gold wire, platinum, oxychloride or oxyphosphate of zinc, undissolved gutta-percha, lead or other materials take up the greater portion of the root canal. Hence the infinitesimal evaporation and its unimportance can be readily appreciated.

In the filling of one hundred large cuspid roots the evaporation

of the chloroform would amount to fifteen drops, or one drop in nearly seven roots filled *full* of liquefied gutta-percha, while in the filling of one hundred of the smallest buccal roots of upper molars the loss by evaporation is one and a-half drops, or in each root less than one-sixtieth of a drop.

In using a solution of gutta-percha and chloroform for root filling, it must be borne in mind, that during manipulation and before final sealing of the root canal, the chloroform should be permitted to evaporate, that the canal is not intended to be filled with liquefied gutta-percha, but that the greater portion, at least one-half, or two-thirds, should be filled with some other material; when this is done not only does the chloroform evaporate entirely, but so little of the gutta-percha remains in the root, that the infinitesimal amount of the shrinkage which could possibly take place, in even a carelessly operated case, could only be inconsequential.

The proper method of filling roots in the light of our present state of knowledge of the subject is as follows:

When the root canals have been cleaned as thoroughly as they can be, without drilling into them, but by means of the finest of broaches, and when the condition of the surrounding tissues, is satisfactory; the root canals and generally the space, if any, which may exist beyond the apex, are pumped full of eucalyptol and iodoform; the latter is an exceedingly valuable drug in these cases, (its power to prevent the formation of ptomaines is without question remarkable,) without any special effort to dry the canals, merely removing the superfluous eucalyptol, the chloro-percha should be forced into the roots, where it is possible to use a broach with cotton wrapped around it, this should be done, in some cases the broach alone must be used, while in others not even the finest broach will penetrate the canal, and reliance for the successful filling of these canals must be had on the pressure which is exerted on the chloro-percha at the opening of the root canal into the pulp chamber. The principal part of the root canal is now filled with gutta-percha cones, compressed wood, gold wire, lead, oxyphosphate of zinc or any other material which may be preferred; whatever is used, however, should be of sufficient stiffness to drive out nearly all the chloro-percha, which now is almost free from chloroform, yet yielding to pressure. I prefer for this purpose the oxyphosphate of zinc, which during the process of its hardening can be so manipulated as to exert the necessary pressure; leaving, in

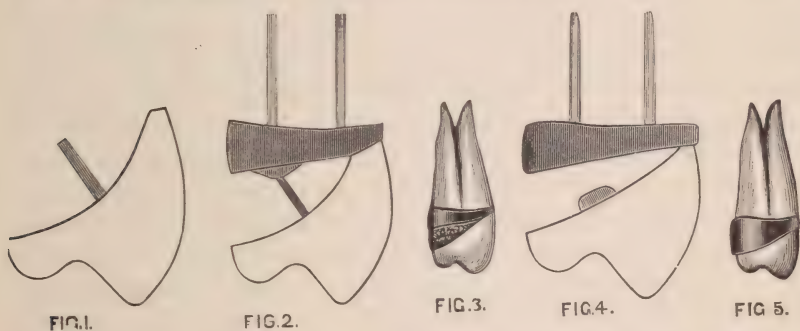
fact, a root filling of oxyphosphate of zinc coated with gutta-percha. It is also my practice to incorporate a small quantity of iodoform—pure and simple—into the chloro-percha used for the root filling. Much as the correctness of this method may be questioned (it having been claimed that through the apex of the root the iodoform might disappear), practice has proven, that seldom do unfavorable results follow, while observations of cases where roots have been filled with iodoform and cotton, plainly indicate the power of iodoform to either prevent the growth of microbes, or hold in indefinite check their activity, if present.

A METHOD OF MAKING A CROWN.

By A. P. JOHNSTONE, D. D. S., Anderson, S. C.

If you will kindly give space to a brief description of how to make a porcelain crown for bicuspid (especially), or molars I will be glad to contribute the following:

After having fitted a cap, with one or more posts as the case demands, to the root, a saddleback tooth, Fig. 1, is selected, ground and adjusted to place and soldered to cap, Fig. 2. Then it



is removed from investment, thoroughly cleaned of articles of marble dust or plaster and an easily fusing body is packed under crown and around the pin, completely filling vacant spaces and contouring to the desired shape, and fused. You then have a crown when completed as represented by Fig. 3.

The same crown can be made by backing the saddleback tooth with gold, adjusting and filling the vacant space with gold solder. See Figs. 4. and 5. But it is not quite so neat as when the body is used instead.

If one fits himself up with a Parker furnace (I do not know of a better one, there may be, however), for soldering, he will have but little use for a blowpipe, save a small blowpipe for light soldering and not only the above described crown but any other crown can be easily made, or any piece of bridge work.

I am living in a small town where the illuminating gas is not used, yet with a gasoline generator, bought of the Buffalo Dental Manufacturing Co., and a Parker furnace I have no trouble in soldering any piece of work. With any care at all there is no danger of cracking the teeth. I have repeatedly heated a crown, soldered and cooled it off in about ten or fifteen minutes without cracking it. With this little furnace there is no use of any more investment than merely to hold the parts together till soldered.

The drawings explain themselves.

THE TREATMENT OF ONE FORM OF BLIND ABSCESS.*

BY A. W. HARLAN, M. D., D. D. S., CHICAGO, ILL.

Reported by William Whitford, medical stenographer.

GENTLEMEN: After the pulp of a tooth dies under a filling or by violence, if a hole is not drilled into the pulp chamber in the course of time the pulp will become decomposed. The reasons for that I have previously stated to you. In the process of decomposition, if the irritation that the decomposed pulp sets up is not very violent there will be a slight excavation around the apex of the root, and this excavation is due to the pressure of the gases of decomposition primarily and the agency of microorganisms in conjunction with the expansible gas, which is a result of their destructive action on the pulp and causes a distention of the peridental membrane around the apex of the root; causing a flow of blood to the part, and the substance of the peridental membrane itself is destroyed, and pretty soon pus is formed. If this is a slow process, eventually, around the apex of that tooth there will be what is known as a blind abscess or a cold abscess or a dormant abscess, which is simply another name for a sleeping abscess. This abscess grows and becomes larger. The bone is slowly but certainly liquefied around the apex of the root. The soft tissues undergo a change, and eventually the whole cavity is filled with pus. It may be watery in the first instance, but later it will be concreted, thick,

*Delivered at the Chicago College of Dental Surgery, November 30, 1891.

curdy and cheesy, so that occasionally when a tooth is bored into it will be almost impossible to drain that kind of abscess. Now, what are we to do in the beginning of the treatment of such an abscess? I will tell you as nearly as possible what to do when you begin the treatment of such an abscess, and how it should be treated. I told you at the outset that those sort of cases coming into your hands are not suitable ones for immediate root filling. When you bore into a tooth of that kind, in the first instance you must necessarily have applied the rubber dam. Remember, I said a tooth where the pulp had died beneath a filling, or a tooth where the pulp had died by violence, as by wedging or too rapid regulating or some other form of violence, but not through exposure of the pulp to external agencies. Occasionally the pulps of teeth die under fillings or by violence, and the pulp withers, dries up, and becomes desiccated. Now, in all of these cases where the interior of the tooth is dry, when you bore into it if there is no moisture, how can you tell whether there was moisture or not unless you have previously applied the rubber dam? You see that is an important point in the beginning. These cases will invariably be found to be encysted; the apex of the root will be grown over by a tough membranous, thickened peridental membrane or something analagous to it, which completely closes the apex of the root. It is perfectly easy for any immediate root fillers to open into such a tooth, to treat it antiseptically and fill the root, because it would not have given any trouble at all if the root had not been filled. There is nothing there to permit of the formation of an abscess. In the case under consideration, where the pulp has died and you have decided to bore into it, what must be done? The rubber dam having been applied, the crown of the tooth should be washed with an alkaline solution made either of borax water, an aqueous solution of boracic acid, a two per cent solution of sodium fluo silicate, a solution of resorcin in water, five per cent, or something of that kind that will answer the purpose of completely sterilizing the outside, because you do not wish to carry any infection into the interior of the tooth. All of the burs and drills and instruments of every kind that enter the crown of a tooth should be completely sterilized either by heat or with a suitable fluid medium, and the fluid dissolving the substance used, should usually be water. Now, five hundred degrees of heat will not take the temper out of a bur drill, and it will not take the temper out of a spring tempered broach. But it is not always nec-

essary to use five hundred degrees of heat for that purpose, because a temperature less than that will completely sterilize an instrument. Five hundred degrees, however, is a safe temperature because you are absolutely certain then of sterilization.

When this tooth is bored into either through the filling or through the hard tissue, if it is a central incisor it is on the palatal aspect of the tooth; if it is a bicuspid, in case there is a filling bore through the sulcus: if it is a molar below, probably a cavity beginning a little forward of the center would be best, and going in a direction that will not go beyond the posterior wall of the pulp chamber. Of course the location of the teeth and the way they stand in the mouth must determine you with reference to the opening and the location of the opening in the crown of the tooth. I repeat, the instruments that are used must be sterilized just before using by heat, or by having previously soaked them in an aqueous antiseptic solution. Peroxide of hydrogen will do well for that purpose. The properties of aquaozone will answer the same purpose, and the probabilities are that any one of these solutions will do. I would not use permanganate of potash, as it will stain the instruments and is uncertain. After you have reached the pulp chamber, perhaps there will be a discharge; perhaps the contents of the abscess beyond the apex of the root will be very fluid. It is better to allow it to drain for the time being, and let as much of it come out as possible without any interference. Even the cotton that is introduced into the tooth should not be handled by the fingers. Perhaps you think that is too much trouble. I assure you it is not, and that it is just as easy to pick up some cotton with a pair of pliers from a box and introduce it into a tooth as it is to pick it out with your fingers; twist it around and then handle it with pliers, then dip it into the solution you use and place it in the tooth. I presume very many times there would be no infectious matter carried into the tooth in that way, but if you only had one case where it was carried in and you lost a tooth, then you would be sorry you had not observed the precaution.

It is my custom when boring into a tooth of this kind, if there is not a free flow of pus, to leave the contents undisturbed that day and not try to remove them. I will tell you why. It is difficult to remove a mass of more or less decomposed pulp or a cheesy, curdy mass inside the pulp chamber, and it would require very delicate manipulation indeed to prevent forcing any quantity of it through

the apex. You cannot always tell the condition of the apex of the root of a tooth. The pulp may have died when the person was under twenty years of age, and if it were the root of a second bicuspid tooth you must remember that that tooth did not come into the mouth until the person was eleven years of age, and the root had not entirely done growing at twelve or thirteen. Occasionally they are developed sooner than that. If the pulp dies at eighteen or nineteen and you should see the patient at twenty, the probabilities are that the apex will be large, and the possibility of carrying infectious or septic matter through the root is very much greater. I am coming to a point now where I desire your closest attention.

The object of all this previous carefulness in approaching the pulp chamber is to enable you to place something therein that will thoroughly disinfect and sterilize not only the contents of the pulp chamber and the root canals, but will disinfect the dentine as well. If you should, after having drilled into a tooth under these conditions, introduce a coagulator of albumin, don't you see how you would stop the diffusion of an agent that might be placed in the interior of that tooth? Because you would not only cook and curdle the mass, but you would glaze the surface of the exposed dentine. These are the cases where carbolic acid and chloride of zinc, aromatic sulphuric acid and agents belonging to the coagulating class are not indicated, that is if you wish to be successful in the highest degree. These are the cases where you are very likely to get a discolored crown if it is an exposed oral tooth. If you introduce anything that will have a tendency to affect the coloring matters contained within the tooth, or that will have a tendency to act upon them it will undergo discoloration on account of exposure to the air.

A great many gentlemen have told me at different times that they have bored into a previously white crown which to their chagrin had turned dark or yellow or something like that, and after the root was filled they found they had a badly discolored crown. I will tell you how to avoid that in connection with this treatment. You must allow nothing to get in there that you do not place within the pulp chamber yourself. You must not even syringe it with tepid water, because if you do you will find there is some coloring matter contained within the substance of the decomposed pulp which is soluble in water, that can be abstracted from it, and it will

be diffused through the dentine, and it will be labor of great moment to bleach such a tooth and have it assume its former color. One of the objects of introducing the essential oils in the practice of dentistry, and especially in the treatment of teeth of the character under discussion, was not only to have a noncoagulating disinfecting agent, but one that would be highly diffusible, and the essential oils are very diffusible. You can understand that if you do not introduce any water into the tooth and you only have the moisture that would come from the apex of the tooth or beyond the apex from draining the abscess, that you have a minimum amount of moisture which you can get rid of, because if it happens to be an upper tooth there will be three or four drops that will come down; you can gently wipe that away with a pellet of cotton, you can keep on wiping it without producing pressure. Finally, just before you introduce the essential oil you can gently wash the surface with peroxide of hydrogen. Mind you I do not advise you to wash out the whole interior of such a tooth with peroxide of hydrogen at one sitting, because you would be apt to get into trouble. The bubbling, effervescence, and the probable stoppage for a moment may cause some of the septic contents of the canal to get through the apex, then you have a regular fiery furnace beyond the apex; you have a swollen face which causes your patient much suffering. You will not always cause a swelled face every time you open into a pulpless tooth of this character if you are careful.

Having washed over the surface slightly and gotten rid of the excess of fluid that may be weeping from the tooth, just dry it gently, carefully, so as to not force anything through. Do not introduce an instrument into the root canal or canals, as the case may be, at all, whenever there is much moisture, pus, or pus and blood, or the previously mentioned greasy, dirty, pasty stuff that is found in the interior, and you will find a great many cases of that kind after you have been practicing a few years. You will be astonished to find so much nastiness in the interior of a tooth.

In connection with this discharge of pus and watery fluid or sanious matter, there may be a very decidedly disagreeable smell. That may be phosphoretted hydrogen or sulphuretted hydrogen or both. It seems to me there is a carburetted hydrogen, but I presume there is not. In order to sterilize these contents, still keeping the rubber dam on, you will have to decide whether you use one essential oil or another. I told you the other day that the basis

of nearly all the essential oils was C_{10} , H_{16} , O. or O_2 . It may be C_{20} , H_{30} and O_2 , or O_4 , but there will always be carbon, hydrogen and oxygen. Purified terebene is C_{10} , H_{16} , but if you leave the cork out it would soon be C_{10} , H_{16} , O. All the essential oils that are used in dental surgery have that basis. I find that a combination of myrtol and oil of cassia is best suited to my purpose for the disinfection of the contents of an infected tooth and for the disinfection of dentine. There is no objection to the use of eugenol or to the use of Ceylon cinnamon or oil of peppermint, or of purified terebene; but the two I have mentioned generally answer my purpose and in combination. Myrtol is a little more diffusible than any other oil with which I am acquainted, and that is one of the reasons why I use it, and at the same time it is an equally energetic, disinfecting agent. The oil of cassia contains cinnamic acid, and the probabilities are that this acid is the active volatile camphor that is contained within it, because as I have previously stated it is formed at a temperature between ninety-four and ninety-five degrees Fahr., and is immediately redissolved; it is a volatile camphoraceous disinfectant. It is like the frosting on a window on a cold day. You see the window ploughed up and it begins to get frosty, pretty soon the temperature outside and inside is such that it collapses.

This camphoraceous body, which may be compared to the frosting of a window, is a vaporizable disinfectant and it is a noncoagulator and is capable of diffusion through a mass of infectious or septic matter contained within the root of a tooth where the pulp has died under the circumstances that I have described. These are the teeth that give the greatest amount of trouble to the greatest number of people because they think they have caught cold or something like that after the dentist has bored into a tooth. Very many times the reason why the dentist has given trouble is because unfortunately he has thrust an instrument a little too far and pushed the septic matter through the root, and it has infected the tissues beyond and has set up an inflammation which will only go down after the production of an acute alveolar abscess. An acute alveolar abscess is a very painful thing to most people, and if through your carelessness, ignorance or neglect to use antiseptic precautions you produce an abscess of that kind, you are guilty of the same kind of malpractice that a surgeon is who does not have healing of any wound where he has been the operator, through his

infecting the wound with an unclean instrument, or where there has been incomplete sterilization due to his carelessness. The only way you can effect sterilization in these cases is by the use of diffusible agents. You cannot introduce wood creosote, chloride of zinc, carbolic acid, absolute alcohol or any other coagulating substance that will be diffused through the interior of the dentine. That is capable of proof. You can take teeth and plant them in plaster of Paris and seal the apices of the roots, and introduce a pellet of cotton in the tooth saturated with a diffusible medicinal agent, then you can seal the cavity. In less than twelve hours you find the plaster permeated by the agent that you have introduced into the interior of the cavity. How did it get there? It didn't get through the apex or crown. It was diffused through the dentine and the cementum, and if there had been a peridental membrane it would have gone through that in the same way.

I told you the other day that a small quantity of nearly every essential oil was soluble in water. Supposing it is only one-half of one per cent or one-quarter of one per cent, even that small quantity would be sufficient to completely sterilize a tooth if allowed to remain in it a sufficient length of time. I do not claim that you can have complete, instantaneous sterilization of a tooth or its contents by this method of treatment. I have never claimed that. I say that it requires time to produce sterilization not only of the instruments but of teeth. The teeth are so dense that you must give them time; you must use agents that will produce such sterilization. It is my custom, after introducing a quantity, not equaling perhaps two-thirds of a minim into the interior of a tooth and sealing it with gutta-percha and slightly puncturing the gutta-percha in one or two places, to give an outlet to forming gases, that I have not thoroughly allowed to escape (although I usually give sufficient time to permit the escape of the contained gases that are superficially on the surface; those stored up in the dentine take a little longer.) There may be a small bubble of gas beyond the apex of the root which will have to come out. If you have not sealed the cavity completely with gutta-percha or some other substance, it will come out through the oil. Gases will penetrate almost the densest substance that you can imagine, and so they will pass out through oil and cotton and perforated gutta-percha. But water will not go through, because there is such a small quantity that would be dissolved by the oil or moisture taken into the mouth

that it would not contaminate the interior. If you leave such a dressing as that in a tooth for three or four days, and not less than three days, when your patient returns to you at the end of that time you reapply the rubber dam, before removing the dressing, wash off the surface with an alkaline solution, and then remove it. Why? You do not get any moisture in there; you do not get any contamination from the outside. You are able to see whether it is pus or a watery exudate or blood, or whether the discharge has ceased. That is the only way you can tell. You must keep the tooth dry. If a person comes in and you take out a pellet of cotton soaked in sandarac and take a syringe and wash out the tooth, how are you going to tell whether the discharge has ceased or not? You want to be careful in these cases. It does not require half as much time to do it as I am taking to tell you. This is the result of many years' practice, observation and experimentation. Being thus careful you save yourselves a vast amount of trouble and your patients a vast amount of suffering.

What are you going to do next? Perhaps you will say there is still a discharge of pus. There may be. Sometimes the cavities around the apices of the roots of teeth are very large, and it may be there is an abscess of very long standing present, you could not expect it to fill up with new tissue in three days. It does not do that. You do not expect it. I'll tell you what to do. If there is a collection of pus beyond the apex of the root and you find that it is completely sterilized, that it is innocuous, and that it no longer contains any poisonous elements—if it were septic, ptomanic or infectious, you could take it out of the tooth after three days contact with a diffusible agent such as I have mentioned, and you introduced that beneath the skin you would not produce sepsis because you have a sterilized body. If there is still a discharge, and usually there is, what will you do? You go to work and wash out the whole interior of that tooth with peroxide of hydrogen and $\frac{1}{1000}$ bichloride of mercury. There is not the slightest objection to it. You can wash it out entirely if you desire to do so. You can siphon the contents of the sac beyond if you so desire, but you know how difficult that is. Perhaps you will ask, why didn't you cut into this in the first place through the alveolus? I will tell you why. You cannot always administer an anæsthetic agent. It is not always advisable, and it is not always safe. Then you must remember that all teeth are not so situated that you can make an

opening through the alveolar process and reach the blind abscess in that way. It is not certain that a blind abscess is absolutely located just around the apex of the tooth. There may be a minute fistula, it will pass along and the excavation will be somewhere else—one tooth, two teeth or three teeth—removed from the point of the root, and in that case if you bore directly over the apex you would not reach it. You could not treat it in that way unless you made a large wound. A great many of these cases are on lower bicuspid and molars. It is not always practicable to bore into the jaw through the alveolar process and reach the apex of the root, on account of the probability of coming in contact with the inferior dental artery or the inferior dental nerve. Very many times the apices of these roots are close to the inferior dental canal, and sometimes they almost penetrate it. If it were a cuspid or incisor tooth, frequently it is practicable both above and below, but in a tooth beyond in very many cases it is not. Sometimes you treat a blind abscess in a third molar tooth. How are you going to get in there? The generality of practice will be and always must be to treat these cases therapeutically, and that eighty, eighty-five or ninety per cent of cases must be treated in that way. So among the best methods up to the present time is the one I have detailed to you. After the patient has returned to you a second time and you have thoroughly washed out the interior of the tooth with equal parts of peroxide of hydrogen and a $\frac{1}{1000}$ solution of bichloride of mercury, then you want to thoroughly dry the root as dry as it is possible to get it. You can then introduce a strand of cotton or silk moistened in the aforementioned substances, myrtol and oil of cassia, filling the root not tightly but loosely, and reseal the cavity, making perforations as before and let your patient go. It will be safe to let him go for ten days or two weeks. No harm will result on account of that.

In a great many cases if the excavation around the apex of the root is not very large, and if there is only a slight discharge of pus at the time you first open into the tooth, the probabilities are at the end of fourteen days from the first opening you can fill the root of the tooth. But it is not always practicable to do it so soon, You know that around the apex of the root of a tooth there will often be a small excavation of the socket and a distention of the peridental membrane which will not be refilled with new tissue that will become solidified in so short a period. There may be

granulations there and they may fill up the space, because a space exists after the destruction of bone, but it will not become solidified for a considerable period. But when pus is no longer discharged from the pocket, when there is no longer anything but a clear serous exudate, in the vast majority of cases it will be perfectly safe to fill the root. You all know the appearance of blood serum when it comes into a tooth. I can tell by its appearance whether it is disorganized organic matter or whether it is blood serum, and if it is blood serum only, you thoroughly dry it out and fill the root. It will be perfectly safe to fill it at that time as there will be no trouble in doing it. If you did suspect any trouble, if you were afraid that you had filled the root of the tooth too soon, what would you do? I will tell you what I would do. If I had filled the root of a tooth too soon, and there was danger of slight disturbance there, one of the first things would be to give the patient a good cathartic, and then I would apply some good counter-irritant. The counter-irritation that I usually apply to the mucous membrane or the external corneous layer is not a feeble one. I give counter-irritation in the following manner: I have a little tin disc (stiff), and in the interior of that I place a pellet of cotton, which has been saturated in stronger ammonia. I dry the surface of the gum then I invert that on the gum and let it stay one minute and I get as good a blister as it is possible to make. I get good counter-irritation where I want it. If you paint the gums with iodine and tincture of aconite root, what do you do? The alcohol that is in the two tinctures has a tendency to make a slight blister. The aconite has a tendency to blunt the sensibility of the terminal nerve filaments for a little while; there is absorption of the iodine which is an alterative under such circumstances, so that it does but a slight amount of good. If you add another equal part of chloroform to the tinctures of iodine and aconite root you get a better agent for blistering than previously; but if you take absolute alcohol and dry the gum you get a good blister; or if you take melted carbolic acid you get a good blister. You can produce a blister in that way, and that is what I mean by counter-irritation.

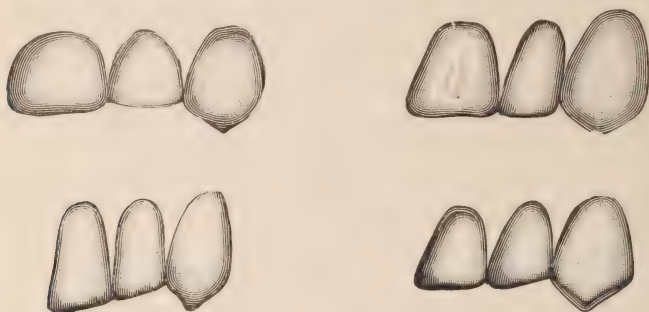
If at the second visit your patient's tooth still shows a slight discharge of pus, give it a third treatment and let another ten days elapse; at the end of that time in all probability, in the vast majority of cases, the root of the tooth will be ready to be filled.

PROSTHETIC DENTISTRY.

By J. J. GROUT, D. D. S., ROCK RAPIDS, IOWA.

The æsthetic is a phase of prosthetic dentistry that many have neglected and to which others have never given more than a passing thought.

It is a branch of our profession that in these days of crowns, bridges, contour fillings, regulating, phagedenic pericementitis, etc., has been sadly neglected by nearly all. Dr. Bonwill says that after thirty years of active practice he is fully persuaded that of all that constitutes dentistry proper, the mechanical forms the basis. To make anything that is beautiful and artistic, especially in vieing with Nature in the restoration of teeth, we must be something more than mechanics, more than capable of filling a tooth or treating an abscess, we must be dental artists. When we place in the



mouth a set of teeth which is to take the place of those grown there by Nature, and which is to assist other parts of the face to depict the soul within, it is not sufficient that we merely take pains to get a good impression, make good joints, use good rubber, and polish the latter until the tongue can find no fault with its surface. We must do something more than this, we must impart action, expression and beauty to these otherwise disfiguring and perpetual monuments of a lack of dental art.

A tooth may be elegantly shaped and colored and yet if it is unskillfully set in the arch, it is a failure.

Beautiful teeth may be set very skillfully and in the proper place in the arch and yet be failures from an artistic standpoint.

In landscape painting the artist strives to make colors harmonize, and different objects correspond one with the other in size,

etc.; so we, as workers in prosthetic dentistry, should strive not only to set a tooth in its proper place but have the size, color and general characteristics of the teeth correspond with the general figure of the person for whom they are calculated, harmonize with his cast of features, color of hair and eyes, taking age and temperament as the chief guides in our selection of artificial teeth.

When we realize that the mouth is the most prominent organ of expression of the entire face, a wrinkle or a curve of it expressing joy, grief, fear, contempt, hatred, love, and in fact nearly, if not all, the passions of the human soul. we will hesitate before placing in it that which will cause an expression not designed by Nature



FIG. 1.



FIG. 2.

herself! In order to do this we will be required to study Nature long and earnestly, we will make many failures, but as we study and strive our failures will become fewer and fewer, until we are as other great artists, close imitators of the God of Nature. Our efforts will then be appreciated by all thinking people.

Take temperament as a guide in selecting teeth. A person who is tall, broad and angular, (bilious temperament), needs a tooth to correspond. A bronze yellow tooth, rather long, square corners, lines strongly marked. A person of medium height, round features, fair complexion (sanguinary), needs a creamy-yellow color, round corners, rather broad, inclined to translucency.

NOTE.—Figure 1, Sanguine. Figure 2, Bilious.

The nervous temperament, fine, delicate features, slender body, requires teeth rather narrow, bluish shade, length predominating over breadth, transparent, cusps sharp and long. Those of the lymphatic temperament are broad, fleshy and dull, requiring a broad, gray or muddy colored tooth, cusps short and ill-defined. Of course these are not all the cases we have to exercise our skill upon, for we have a mixture of these temperaments; for instance, the sanguo-bilious, the sanguo-nervous, etc. Selecting size, shade



FIG. 3.



FIG. 4.

and style for the different temperaments is no easy matter, and is one that requires much study and keen perception.

Let us study not only the æsthetical portion of prosthetic dentistry but all that pertains to it, the different kinds of dentures the manipulation of the same crown and bridge work—in fact anything that will successfully restore the teeth when lost, and while we are doing this let us not forget operative dentistry, regulating, and the treatment of various diseases of the natural teeth, to cap or devitalize a pulp, cure an abscess and the thousand and one things that a dentist should understand.

Let us strive to replace lost dental organs in a natural and artistic manner, not studying this branch to the exclusion of the others, but perfecting ourselves in the whole.

NOTE.—Figure 3, Nervous. Figure 4, Lymphatic.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

Regular meeting November 3, 1891. Dr. D. M. Cattell, President, in the Chair.

Dr. T. W. Brophy read a paper on AFFECTIONS OF THE SALIVARY GLANDS AND THE TISSUES IN CLOSE PROXIMITY TO THEM.

DR. T. L. GILMER: I do not feel like opening the discussion on this paper, and yet I do not like to sit still and say nothing. I had no idea what phase of the subject Dr. Brophy would take up, but think him wise in selecting one special branch rather than to endeavor to cover the whole field of oral surgery. I, perhaps, have not had as much experience in the treatment of the diseases mentioned as the essayist, but have had more or less to do with such lesions for a number of years. The essayist spoke of washing out pus cavities with carbolyzed water and a solution of boracic acid following the use of peroxide of hydrogen. I have had some experience during the year in the use of water saturated with the oil of cassia for such purposes, and recently have had an opportunity to perform operations on the soft tissues, in which I have employed no other antiseptic. I have almost abandoned the use of bichloride of mercury and have been greatly pleased with the results obtained by the substitution in its place of the water of oil of cassia. Instruments may be placed in this water and kept wet with it while an operation is being performed, and they are not injured by its application as they are by the bichloride solution. I recently performed an operation for hare-lip in which cassia alone was employed as an antiseptic, without a drop of pus forming, following the operation.

DR. NOYES: You mean cinnamon water?

DR. GILMER: I drop into water as much of the oil of cassia as the water will absorb, in this all of my instruments and sponges are placed. I do not feel that I can add anything to what Dr. Brophy has said in regard to the treatment of the ulceration of the glands, as I have had but little experience in that line. I was pleased with the paper, and it seems to me that if we could have more papers on subjects of this kind it would be a benefit to the dentist, as very many cases are neglected and improperly handled which might be better treated if the proper knowledge was had on these subjects.

DR. A. W. HARLAN: The subject of the management of troubles connected with the salivary glands or glandular system of the mouth is one that should be of interest to every practicing dentist, even if he does not attempt to do anything in cases where these glands are involved. One of the things that I should like to impress upon the minds of dentists is this: In every case of enlargement or swelling of a gland in the floor of the mouth or in the region of the duct of Steno, it would be well to use delicate probes if there were obstructions. A short time ago a lady was brought to my office who was going to have an operation for the removal of the submaxillary and sublingual glands of the right side, on the ground that the disease was malignant and it was necessary to save her life. The husband of the lady having some doubt about the matter sent her to me for an opinion. I found on examination that the submaxillary gland was very much engorged on the right side and filled with a straw colored fluid, and little granules of calcific matter came out, and the gland was emptied in that way. She decided not to have it removed. I found by washing the interior with a one per cent solution of yellow pyoktanin that the case got well in about three weeks.

I would like to state that the measure mentioned by Dr. Gilmer with reference to the use of oil of cassia water is a very useful one.

I was reading, while sitting here to-night, Dr. Miller's experiments in which he makes a statement to the effect that a five per cent solution of carbolic acid fails to sterilize instruments in twenty minutes, an hour, or even two hours. He thinks it is not an ideal agent for sterilizing instruments. Bichloride of mercury is a very useful thing for sterilizing instruments, but it spoils them. And this article goes on to state that the essential oils are absolutely valueless for that purpose. If this is so, why is it that the plastic wound will heal without the production of pus?

Last winter a gentleman came to this city suffering from a very large, deep-seated abscess in the right side of the jaw, and it became necessary to have it opened externally. The face was shaved, and the instruments that I used for opening that swelling and for probing it were sterilized in the cassia water solution, and that case healed absolutely after the complete drainage of the abscess, without any further production of pus, and I purposely kept it open in order to see the gentleman three successive times at periods of three days. After the operation I used a probe every time just

merely to satisfy myself that everything was all right and there was no pus produced. It seems to me in view of that one case, if we had no others—although there are plenty of others to substantiate the idea—that the experiments of Dr. Miller are faulty in some particular; that instruments can be and have been sterilized and that cases have been operated upon without the production of pus, and that therefore the essential oils are not valueless.

It is possible on account of the absorption of a certain quantity of oxygen by the essential oils that may be used in the practice of general surgery for the irrigation of abscesses with numerous fistulous openings, for the irrigation of the antrum of Highmore, and for spraying the pharynx or the mouth in general so that we are not compelled to rely on irritating agents or upon those with bad odor for the sterilization of instruments. There is another thing to be borne in mind, and that is, that instruments cannot be sterilized instantaneously with any substance unless they are heated to 500°. F.

The whole domain of oral surgery is so large that this one phase having been touched upon by the essayist is sufficient for the consideration of this assembly for one evening. I hope the reading of the paper will have this effect—that dentists will be very careful in examining swellings of this kind and will familiarize themselves with the use of delicate probes and instruments, and that if they are introduced into a gland innocently or otherwise they must always be clean.

DR. C. F. HARTT: It has been a pet theory of mine that we should have oral surgeons in the true sense of the word. It seems to me that all dentists should be taught enough oral surgery to be able to diagnose a case correctly. It sometimes requires more skill to successfully diagnose a case than to perform the operation. To be able to diagnose a case scientifically is a great attainment, and it is within the reach of all of us. When it comes to being a fine operator or a fine oral surgeon he has got to be automatic. We can theorize on these matters, as I have said, but when it comes to operating we must have practice, and in a city like Chicago we ought to have a half dozen good men who should do nothing else but this special work—men who are not tired out in building bridges or making artificial teeth. They should be men of high standing scientifically, and we should be assured that our patients are not tampered with. The men who perform these operations

should affiliate with medical men largely and still be dentists in the true sense of the word. For instance, we have such men as Drs. Brophy, Marshall and Baldwin who make more or less a specialty of this work, and if they and others would do more of it I do not think it would be necessary for us to send for Dr. Senn and Dr. Fenger to do this work for us. It should be done by some one belonging to our profession. It is a question in my mind whether a man who is engaged in filling and replacing lost teeth should attempt to perform these operations himself. If the right men would devote themselves exclusively to this work they would find more than enough to keep them busy. It would be a lucrative calling, and there are enough men interested in this subject who would contribute to help such men to go to the hospitals in Vienna, Paris and London to study this subject thoroughly.

About the essential oils. Take carbolic acid one part, oil of gaultheria and oil of cinnamon equal parts, and you can pump it through a fistulous opening in the mouth very readily and it will not produce an eschar. Although it smarts a trifle, it makes a good disinfectant. I think there is a great advantage to be derived from the use of oil of cinnamon and oil of gaultheria with carbolic acid.

DR. T. W. BROPHY: I have been impressed this evening with the desirability of having the titles of papers announced on the card sent to members. By having this done we are apt to get a fuller discussion. There are a great many gentlemen who would like to give the subject thought before the time comes for discussing it, and more especially the younger members. I remember when I used to take the State society programmes as soon as they were issued, a number of years ago, look them over and study up the subjects somewhat. There were a great many things I knew very little about. I would study them, and when I went to the meeting I could get a great deal more out of the papers and discussions than I possibly could have done had I not looked the matter up before coming.

While Dr. Harlan was talking I thought of the conditions of the mouth in the presence of certain diseases, as, for example, abscess of the antrum. The mouth is the home of the microbe, and we find it present always in abscesses; no matter how aseptic we render our instruments infection from the retained pus may occur. The exercise of antiseptic precautions is a good thing, yet after we evacuate the pus through the opening we have made we bring the

germs in contact with the fresh surface of the wound. It is not for the purpose of making it seem that the sterilization of instruments is not always essential. I believe they should always be sterilized, no matter what condition we may meet. We must be extremely cautious in rendering the parts as aseptic as possible.

I want to lay special stress upon the use of peroxide of hydrogen. A prominent member of the profession, at the meeting of the American Dental Association at Saratoga, said that peroxide of hydrogen was a dangerous agent and it ought to be discarded, because it was doing so much mischief. The statement was made that he had by injecting it into a fistulous opening somewhere along the border of the lower jaw, and by contact with pus, raised the periosteum, during the process of effervescence, until it had denuded the bone back to the angle. The subject was passed in a very hasty manner, and I did not have an opportunity to say what I would like to have said.

Pus in a cavity should always be removed by irrigation and the walls of the cavity may be subsequently cleansed by the use of peroxide of hydrogen. No matter how thoroughly you may wash the parts the use of peroxide of hydrogen will most effectually remove every vestige of septic matter by oxidizing it. When we have thus treated the parts we have accomplished something in the way of leading to a cure.

I have used the preparation of oil of cassia a great deal and I like it very much. I think it is a very pleasing remedy to make use of in our practice, because it is not objectionable to patients. Perhaps we might have a patient who dislikes it quite as much as iodoform and those agents that have such an abominable odor.

I had occasion to-day, at the college, to open a stricture of the duct of Steno, at the first effort I did not succeed. The stricture seemed to be quite complete, and after getting the patient into a better light I succeeded in getting a small probe through and getting an evacuation of the fluids. The pain resulting from the stoppage of the duct of Steno is extreme, the parotid gland being bound so to speak, in a strong sheath renders its expansion impossible beyond a certain point. The only way it could expand is by absorbing the sheath around it. If you remember, the facial nerve passes through it. We get paralysis in extreme cases of the disease of the parotid gland. It is a complicated structure and is filled with nerves and vessels of a most important nature. I feel

well pleased with the discussion entered into by Dr. Gilmer, and, while it is a necessity to open these glands promptly, we sometimes find a salivary fistula following—a very troublesome affection. This subject is so broad that no one can do justice to it in the short space of time allotted for its consideration. I have seen fit to bring up some phases of the diseases of the glands that seems to be more in the domain of dentistry. If I have succeeded in presenting anything for further thought and consideration and thrown a little light on a subject that will help any of you hereafter, I feel as though my labor has not been in vain.

OFFICE PRACTICE.

DR. C. N. JOHNSON: I rise for a little information on a case that I have recently had in practice. First of all I will report a case I had to-day. About seven days ago a patient applied to me with a lower second bicuspid with a loose filling in it. The pulp was dead and an abscess began to form. I commenced treatment in the usual way. I put on a rubber dam, treated it antiseptically and as carefully as I ever treated a case, but despite all the methods I could use, that tooth still pained and the abscess kept on increasing. The patient and I have been fighting it out for about seven days until to-day, when I extracted the tooth. On its removal I found that the pulp canal was in a good condition, but there was a sac not upon the apex of the root, but upon the side, where my medication had not reached. I just mention this as one of those puzzling cases that come under our care from time to time. I disliked very much to extract the tooth, but the gentleman was completely worn out and said he could stand it no longer. I would like to know if any of the members here have had a similar case.

The case I want information upon is this: A boy about thirteen years old had an accident by which the mesial corners of each central incisor was broken squarely off and a V-shaped opening left between his incisors. They are not broken so far that the pulp is exposed, and I hope it will be saved alive in each tooth. I want to know how to restore these corners with the pulp alive, serviceably and artistically.

DR. HARLAN: I will say with reference to the first case, that probably there are two foramina in that tooth—one of those little openings that we sometimes find, especially in centrals and bicus-

pids—and that the difficulty arose from the fact that the doctor did not discover that opening. I do not know whether he discovered it after he extracted the tooth or not. There are a great many single rooted teeth that have more than one foramen and they do not have their exit at the apex of the root.

With reference to the other case, I would wait until the patient was sixteen or seventeen years of age and until I had an opportunity of restoring those corners. I have at the present time in the city of Chicago no less than fifteen or twenty of that kind of cases that I am waiting to do something for when the proper time arrives. When I was less experienced and had a great deal more time than I have at present, I used to feel that it was imperative on my part to fill those teeth. The result was that the pulps died. I do not fill them any more. I do not even protect them unless it is absolutely necessary. I would rather have them exposed to the elements than to do anything to them.

DR. JOHNSON: I want to ask you how you would treat that boy when he gets to be sixteen years of age. How would you restore the contour?

DR. HARLAN: Well I presume I would have to decide at the time. I do not know what would be best. It is not advisable to try to cement on a porcelain corner on account of its instability. I have built on some corners with platinum and gold that were very conspicuous. The longer you wait for those teeth to grow the less noticeable will those corners be, and frequently the teeth drop a little so that the ends may be trimmed, and there is still a smaller quantity to be restored, and eventually the boy, if he does not grow bald, will have a mustache to cover up the teeth in that way.

DR. HARLAN: If you will permit me, Mr. President, I will relate an incident that occurred in my office to-day. It is rather unique. About three years ago a gentleman split the upper left second molar, vertically, and Dr. Wikoff put a gold band around it. The adjacent tooth was repaired with amalgam, and in all probability some of it came in contact with the gold band and eventually broke it, as it got loose. Another gold band was put on about a year and a half ago, and to-day the gentleman was in my office. The palatal root of that tooth has been destroyed by microbes. I presume it was cut off entirely. I extracted the buccal roots and then went down far enough to remove the palatal root. Not having seen a case of that kind before, I report it as an evi-

dence of the fact that dead tissue of that kind will eventually be destroyed by external agents which were not thought of. If you replant a tooth, the probabilities are that eventually the root will be destroyed by a fungus ; if you transplant a tooth, the probabilities are that the root will be destroyed ; if you implant a tooth, the probabilities are that the root will be destroyed ; and if you band a split root, the chances are that it will be destroyed in the same manner. This root was beautifully excavated on both the crown aspect and the root aspect, the root being simply washed out completely. It was not decayed in the ordinary sense of being a case of dental caries.

DR. NOYES : Was the gum tissue lying in close contact with the surface ?

DR. HARLAN : The gum hugged the neck of the tooth just exactly as it did when the tooth was split. The tooth was fractured vertically and a band was put on to hold the parts together. There was no decay.

DR. NOYES : How far up was the separation in the alveolus ?

DR. HARLAN : The root was capped up to the edge of the alveolar process above the gum.

DR. NOYES : The question in my mind is whether the original fracture had broken the root about half way in the alveolus and still left a hold upon the gum and alveolus to prevent the broken part of the crown and root from separating.

DR. HARLAN : There was nothing of that kind. We saw the case often and would have discovered it, as it was a particular patient and we were anxious to save the tooth.

DR. F. H. GARDINER : Speaking of fracture of a tooth reminds me of a case where the first molar was split, I think about fifteen years ago. It was not decayed. Dr. Swain put a gold bolt through from the palatine surface to the buccal and screwed it up tight. Five years afterward there was a cavity in the mesial surface, which I filled with gold. That tooth is all right to-day. I did not notice whether the pulp was dead or alive.

DR. J. H. WOOLLEY : Two similar cases as those of Dr. Johnson came under my care. The first a blind abscess of the left central incisor, located near the labial gingival margin. I was surprised to find the pulp alive, which I destroyed. Two pulp canals were discovered, one of which found its way to the blind abscess. The inflamed pulp leading to the abscess explained the cause of the trou-

ble. The second case of Dr. Johnson was similar to mine and I advised my patient to wait events ; it was that of a boy of twelve years of age ; he returned in about a year with an abscessed tooth in the left superior central incisor. After treating and filling the root I advised the child's mother to wait until he was older before filling permanently.

SOUTHERN ILLINOIS DENTAL SOCIETY.

The sixth annual meeting of the Southern Illinois Dental Society was called to order at 2 o'clock at the Alberton House, East St. Louis, by the President, Dr. L. T. Philips, of Nashville.

Prayer was offered by Rev. West, of East St. Louis. The President's address was delivered by Dr. L. T. Philips and declared open for discussion. On motion the courtesies of the floor was extended to all visiting dentists and physicians. The discussion was opened by Dr. Wm. Conrad, of St. Louis, and continued by Drs. Prichett, Philips, and Dickson. Dr. Fisher, of St. Louis, and Dr. Bates, of East St. Louis. On motion the subject was passed.

Dr. L. B. Torrence, of Chester, then read a paper on antiseptics. Dr. G. W. Entsminger being absent, Dr. Harper, of St. Louis, consented to open the discussion which was continued by Dr. Dickson, Dr. Conrad, of St. Louis, Dr. Lindsley, of St. Louis, Dr. Torrence and Dr. Prichett.

On motion, the subject was passed.

On motion, Society adjourned to 8 o'clock, P. M.

EVENING SESSION.

Society was called to order at 8 o'clock P. M., by the President.

On motion, the courtesies of the floor was extended to all visitors present.

The minutes of the last meeting were approved.

The paper of Dr. R. C. Morris, of Olney, entitled "Care of Childrens Teeth," was then taken up. The discussion was opened by Dr. McMillan and continued by Dr. Conrad and Dr. Harper, of St. Louis, Dr. Bates, of East St. Louis, Dr. Prichett, Dr. Louis Ottofy, of Chicago, Dr. Fisher, of St. Louis, Dr. Fairbrother, of East St. Louis, and Dr. Dickson. On motion, the subject was passed.

Dr. Wm. Conrad, of St. Louis, then read a paper entitled "How to Get the Most Good out of a Dental Society."

Dr. Prichett waived his right in opening the discussion and Dr. Louis Ottofy, of Chicago, opened the discussion.

The President announced that we would have a session Wednesday, 21st, at 3 o'clock P. M., after the clinics.

On motion, the Society adjourned to 3 o'clock P. M., Wednesday, the 21st.

OCT. 21, AFTERNOON SESSION.

Society was called to order at 5:30 P. M. by the President. Minutes of the last session were approved. Dr. A. G. Purdy, of Du Quoin, and Dr. H. R. Rutledge, of Hillsboro, were elected to membership.

Society adjourned to 7 P. M.

EVENING SESSION.

Society was called to order at 7 P. M. by the President. Minutes of the last session were approved. The discussion of Dr. Conrad's paper was continued by Dr. Prichett. On motion, the subject was passed.

On motion, the Paper of Dr. J. E. Entsminger, was passed till a later session.

Dr. W. N. Morrison, of St. Louis, reported some cases of implantation, one of which he exhibited in the clinic. Also regulating cases of which he exhibited models. The subject was discussed by Dr. G. W. Entsminger, Dr. Conrad, of St. Louis; Dr. Morrison, of St. Louis.

Dr. Fisher gave an outline of a paper entitled: Cleanliness in Practice.

On motion, Society adjourned to 9 o'clock A. M., Oct. 22.

OCTOBER 22.

Society was called to order at 9 A. M. by the President. Minutes of the last session were approved. Secretary reported active membership of Society at last meeting, thirty.

Members dropped.....	1
Members admitted at present meeting.....	2
Present active membership.....	31
Honorary members.....	3

This with the Treasurer's report was adopted and placed on file. Dr. Torrence, Supervisor of Clinics, made his report, which was discussed by Drs. Betts, Canine, Prichett, McMillan, Rohland, G. W. Entsminger and Corbett. The subject was passed. Dr. McMillan then read a paper entitled, "When to Condemn a Pulp." The discussion was opened by Dr. Prichett and continued to the next session.

The following resolution was adopted :

WHEREAS, Steps are now being taken to hold a World's Columbian Dental Meeting in Chicago in 1893,

Resolved, That the Southern Illinois Dental Society most heartily endorse the proposed meeting and commend it to the Dentists of Southern Illinois for their support and coöperation, and that it pledges itself collectively and individually to do all in its power to promote its success.

Society adjourned to one o'clock P. M.

AFTERNOON SESSION.

Society was called to order at 1 o'clock P. M., by the President. The minutes of the last session were approved. The discussion of Dr. McMillan's paper was continued by Drs. Canine, G. W. Entsminger, McMillan, Dickson and Torrence.

On motion, the subjects of Drs. Morrison's, Fisher's and McMillan's papers were passed.

Dr. Betts read a paper entitled "A Case of Pyorrhœa Alveolaris in Practice." The discussion was opened by Dr. Prichett. The subject was passed. The paper of Dr. J. E. Entsminger was read. Subject: "Dental Hæmorrhage and its Treatment." The discussion was opened by Dr. Corbett and continued by Drs. Betts, Prichett and Rohland. The subject was passed.

The election of officers was next in order.

Dr. C. C. Corbett was elected President.

Dr. L. B. Torrence " " Vice President.

Dr. W. E. Holland " " Secretary.

Dr. L. Betts " " Treasurer.

The time and place for holding our next annual meeting was fixed for the 3d Tuesday of October at Mt. Vernon. Dr. G. W. Entsminger and W. H. Damon were appointed to serve on Executive Committee.

The officers were installed and the minutes of the session were approved.

Members present during meeting: Drs. C. B. Rohland, J. J. Jennelle, G. W. Entsminger, T. W. Prichett, C. C. Corbett, N. H. Jackson, G. A. McMillan, R. H. Canine, J. Peacock, J. G. Dickson, A. D. Penny, W. H. Damon, L. T. Philips, W. E. Holland, L. B. Torrence, H. R. Rutledge, A. G. Purdy.

VISITORS PRESENT.

Dr. Louis Ottofy, of Chicago.

“ W. N. Morrison of St. Louis.

“ Wm. Conrad, “ “ “

“ Fisher, “ “ “

“ Harper, “ “ “

“ Robitoy, “ “ “

“ Flanagan, “ “ “

“ Eames, “ “ “

“ Lindsley, “ “ “

“ J. J. R. Patrick, “ Bellville.

EDITOR OF DENTAL REVIEW:—I send you proceedings of Southern Illinois Dental Society. If you wish to publish in part or whole, all right. There is a resolution in it in regard to World's Columbian Dental Meeting.

Yours truly,

W. E. HOLLAND, Secretary,
Jerseyville, Ill.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITORS:

LOUIS OTTOFY, D. D. S.

L. L. DAVIS, D. D. S.

C. N. JOHNSON, L. D. S., D. D. S.

PYORRHŒA ALVEOLARIS.

We see little in print of late on the subject of pyorrhœa alveolaris, and what little is printed tends to throw doubt on the possibility of its cure. We believe that this disease is as amenable to treatment as any other which affects the oral cavity, and that as large a per cent of cases may be cured as it is possible to cure of caries, erosion, alveolar abscess, or any other affection which we meet in ordinary practice.

This may seem a strong statement and one not borne out by the facts, but we ask a careful consideration of the question with the hope of stimulating those who have been accustomed to look with despair upon this disease.

Cases are frequently met with where skilled dentists have informed patients that it was useless treating pyorrhœa on account of the uncertainty of its cure, but these same dentists will cheerfully insert fillings in the face of repeated recurrence of decay. Many teeth are undoubtedly lost from pyorrhœa, but that should not prevent us from combating it at every point, and as the cure of any of these affections of the mouth is only comparative, we may hope for an equal measure of success with pyorrhœa as with the others. The argument may be made that we do not yet fully understand the nature or cause of pyorrhœa, and that therefore the treatment of it is a doubtful issue. The very same is true of ero-

sion. We do not understand this affection and yet we leave no stone unturned to check it.

There are mainly two conditions present in pyorrhœa which distinguish it in a curative sense from the others. It attacks a more vulnerable point, so far as the safety of the tooth is concerned, and it is more intimately associated with constitutional conditions.

The former simply calls for earlier interference on the part of the dentist and the latter for proper attention to general hygiene. The reason why so many teeth are lost from pyorrhœa is partly because the disease is not recognized so early by the patient as is decay, and partly because practitioners ignore the necessity for constitutional treatment. It is folly to expect a perfect return of the tissues to health while the patient's system is in a debilitated condition or where the vitality is constantly being lowered by some drain on the system. In cases where there is an evident relation between pyorrhœa and general debility it is necessary to tone up the system in conjunction with the proper amount of stimulation to the gums.

The question as to what constitutes a cure must remain a matter of individual opinion, and at the outset we probably had better state our idea of a cure. If a case presented in which the gums were purple around the teeth and pockets were plainly perceptible with a free discharge of pus on pressure, and where the teeth were beginning to loosen in their sockets and were sensitive to the touch—if a case of this kind presented and in a few weeks yielded to treatment so that at the end of that time the gums were of a healthy color and firmly compressed around the necks of the teeth the flow of pus completely checked, and the teeth partially (though seldom perfectly) restored to their original firmness; and if this case came into the office in one or two years and there was no recurrence of the trouble, we should in our judgment call that a cure. The physician does not usually wait that long to claim a cure, nor does he admit his ability at fault if a patient occasionally has a relapse.

We cannot claim to put the mouth in as perfect a condition after a severe case of pyorrhœa as it was before the disease attacked it, neither do we leave the teeth as strong after filling as they were before they were decayed. But that we are in many instances able to attain the measure of success indicated by the foregoing case is true as it is that we save teeth by filling, and this fact should

encourage those who have begun to class pyorrhœa among the incurable affections to look a little more closely into the methods of treatment.

It is impossible within the limits of an editorial to deal scientifically with all the lines of treatment necessary to meet the different manifestations of the disease, but a hint here and there may be useful.

In the local treatment it goes without saying that all deposits on the necks and roots of the teeth should be removed, and this in many instances is a procedure which extends over several sittings, and which cannot always be perfectly accomplished until the gums have been reduced by an astringent so that—with a thin instrument—they may be held away from the neck of the tooth in the search for deposits, without bleeding. From time to time during the treatment examination should be made for calculus, lest any small particles be left as nuclei for further trouble. If any one pocket seems more stubborn than the others, diligent search along the root—often deep under the gum—will usually reveal a deposit to account for it. Cleanliness is the first requirement.

In the use of astringents we are inclined to think that practitioners have not used them in sufficient strength to obtain the best results. The one we have found to answer the best purpose in the majority of cases is the iodide of zinc, recommended years ago by Dr. Harlan. Instead of using it in solution, we have employed the crystals, working a minute quantity under the free margin of the gum and into the pockets with a flexible thin scaler. We have seen no ill results from using it in this form, though in some instances it causes slight pain for a few moments after the application. A very small amount is sufficient for each pocket if thoroughly brought into contact with the diseased tissue, and a sufficient dilution for penetration is obtained from the natural moisture lying under the gum margin.

The frequency of the treatment must be regulated by the condition of the case—every other day being as often as is advisable in any instance, and this extended to a longer period as the case progresses.

Whenever constitutional treatment is called for it should be in the line of raising the vitality, and checking any undue drain on the system. The means employed among the most advanced practitioners for toning up the health seem to tend more in the direc-

tion of advising change of air and scene, and prescribing regularity of diet and exercise, rather than to the free administration of drugs. Medicines—more's the happiness—are no longer poured into people so plentifully as in former times.

If each case of pyorrhœa is treated judiciously and a sufficient study is given to its peculiarities we will see an encouraging measure of success.

There is one condition found in the mouth however—quite as disastrous in its results—which must not be confused with pyorrhœa, but which apparently is often considered in the same light. We have never seen a sufficient distinction made between these two affections. Pyorrhœa calls for a flow of pus. The alveolus is apparently broken down by a suppurative process, and there is an outlet at the gum margin through which the pus may be forced by pressure. In this other affection we find no discharge whatever, and the gum appears uninfamed and healthy. It is normally attached to the neck of the tooth, and there are no pockets. But the tooth gradually loosens until there is apparently no process of bone supporting the root, and the tooth may be moved back and forth, carrying the gum tissue with it. This lack of support finally results in loss of the tooth, though in many instances teeth in this condition may remain in the mouth for years. This latter process, instead of being a suppurative one, seems to be an absorptive one. The alveolus is absorbed in some manner without the occurrence of pus, and we are, in the presence of this disease, more helpless than with true pyorrhœa.

We trust that some one may yet give us a proper insight into this peculiar condition.

C. N. J.

IS DENTISTRY A LUCRATIVE PROFESSION?

Lately we have heard this question discussed from time to time both for and against the proposition that we have placed at the head of this article. From the number now entering upon their professional studies it would appear that some one has been whispering into the ears of the youth of the country that "Dentistry is a lucrative calling." Let us examine the subject a little and see if we can account for the phenomenal number of students now entered in the colleges in the United States. The length of time required before a student can receive his degree may be roughly

estimated at three years. In some cases it will fall short of this in colleges where the term does not exceed five months in each and every year.

We will assume for the sake of argument that three years will be spent before the future dentist can earn anything. For the

First year the fees at college will amount to about .. \$110.

Second year " " " " " " " " .. 120.

Third year " " " " " " " " .. 130.

Total \$360.

(In some colleges \$240 will cover all fees.)

The cost of living will average from \$360 to \$400 per annum as the minimum sum and the maximum may reach as high as \$1,000, or even \$2,000 per annum. (If the parent of the student happens to be a dentist his son will not spend \$2,000 per year while attending college.)

Let us estimate the fees for the three years at....\$ 350.

Cost of living per annum \$500, three years..... 1,500.

Cost of instruments at college..... 160.

Cost of opening a modest office..... 800.

Cost of office rent the first year in a city..... 600.

" " " " " " " " the country..... 200.

Cost of living, city or country..... 1,000.

Total for four years in a city\$4,350.

" " " " " the country.....\$3,950.

The above figures are very modest in amount and may be increased by as much as \$2,000 or \$3,000, even in the latter case the amount would not be considered extravagant. At any rate, not less than four years' time must be consumed and from \$4,000 to \$6,000 in money expended before a young man can be placed on a self-sustaining basis. This will not take into account the time or expense of his becoming a graduate of a first-class high school or its equivalent, which must now be done before the student can enter a dental college. This alone will be an expense of not less than \$800 to \$1,200 for the most economical parent who supports a son for four years while he is in the high school. In many cases \$1,500 to \$2,000 will be required for this expense. Such an amount should be added to the above in order to show the actual cost of fitting a young man in the least expensive manner to practice dentistry. If a course of four years at college (technical or literary) is added to

the above, \$2,500 to \$4,000 more must be added to the principal cost of the whole education. Many merchants, builders and manufacturers stop school life when they have finished the eighth grade, and the four years which they spend in the workshop or in merchandising or clerking will fit them to receive men's wages when the dental student enters the dental college. Often the \$3 or \$5 per week which is received the first year is increased the second and third from \$2 to \$4 per week, so that by the end of the fourth year they will be receiving as high a salary as \$600 or even \$720 per annum. Their support is actually provided for them from the outset so that the parent is not called upon to furnish anything during the whole four years when the earnings are averaged for that period. Practically, the dental student has to be maintained from eight to twelve years at a cost of from \$6,000 to \$12,000 before he becomes an earner of money. Will he equalize and wipe out the debt he owes and be on a par with the artisan, merchant or manufacturer in the next dozen years? Our observation is that he will not unless he has been trained to the strictest habits of economy and has a large store of business tact. Dentists are like physicians and teachers, seldom good men of business unless they have received some training before entering upon the study of a profession or its practice. Is dentistry a lucrative profession? Who will answer.

MERRY CHRISTMAS AND A HAPPY NEW YEAR.

We wish all of our readers and contributors the compliments of the season and a deserved share of prosperity for the new year. Now is the time to resolve to write a paper for the DENTAL REVIEW for 1892 that will eclipse all former efforts and place your name high on the roll of fame. Keep your good resolutions.

WHEN DOCTORS DISAGREE, WHO SHALL DECIDE.

In the *Western Dental Journal* for November, is an article by Dr. S. B. Brown, of Fort Wayne, Ind., entitled "Status and Claims of American Dentistry." We quote the following:

"The Executive Committee invited me to present a paper upon 'The Status of Dentistry as Associated with the Medical Profession, and upon what Relations it shall Insist.' My construction of the phraseology of the invitation was that an argument was expected on the affirmative, that the dental and medical professions

were associated, and certain relations should be insisted upon. If my assumption was correct, I shall be compelled from convictions to take the negative side of the question.

The medical profession deny that dentistry is an associated profession. I concede they have a right to declare who shall become members of their family, certainly to exclude all not medically educated.

Who among us with justice to himself could accept the place of a consultant with the general practitioner? Who among us can state the constitutional effects attendant upon the administration of general therapeutics? What number of dentists are interested enough in general medicine to possess a medical library, or to take any number of medical periodicals, even write a prescription accurately?

Don't understand me as reflecting upon our profession for this absence of medical interest. Our profession does not demand it. We are gloriously independent of them; until we have acquired a higher degree in dentistry we must not step aside, however desirable collateral sciences may be.

On the other hand, what aid can medical practitioners render in dental practice? Can he diagnose a case of pulpitis? Can he differentiate it from periodontitis? Does he know at what age the teeth are erupted?

How many could pass an examination on the first permanent molar? Are they not often erroneously instructing our patients upon the value of the third molar? What would his council be worth in the lesion caused by pulpless teeth, upon which hinges so much of the character of dental practice now? True dentistry is more allied to medicine than any other profession. This fact has misled many; but if all the medical colleges in the land were abolished, dentistry would not be checked in the least.

The prefix of doctor, and the fact that we speak of our clientele as patients suggests, without much reflection, that we are identical; that our ethics are derived from medical authority, may be also suggestive.

Ethics are the teachings of the Golden Rule, and are recognized and practiced where high moral instincts prevail, whether formulated into a code or not, written or unwritten, whether your signature is attached or not. Learned professions are supposed to be examples of this rule from their higher cultivation in charity, which the Scriptures declare the greatest of all virtues.

It is true, the Ninth International Medical Congress, held at Washington in 1887, after much cavil consented to place "dental and oral surgery" among its sections, or rather, to attach it to its tail, it being the eighteenth and last. Mark the language, "dental and oral surgery;" dentistry is higher than dental surgery, as general medicine is more learned than general surgery. They did not here recognize us as *dentists*, but surgeons, qualified by dental.

I had the great pleasure of being a member in attendance, at a cost of \$20.00 for said membership. If not the best, it was among the best dental meetings I ever attended, and as proof that dentistry is an independent profession I can safely say that our members did not listen to the proceedings in the medical sections, nor did the medical members pay any attention to the dental discussions.

Had they visited our clinical department, they would have been confronted with Carroll at his forge, Land at his furnace, Bonwill with his motor, Knapp at his blowpipe, others hammering at metals, mixing plasters, molding sand, driving

lathes and running engines. Would they here be impressed that dentistry was associated with the medical practice?

Dentistry is more than a specialty, it is a profession, because it is a vocation liberal and benevolent; it has for its object the amelioration of human suffering, it operates upon living organism.

Preparation for its practice involves scientific studies, and is progressive. Those who regard it as a part of the medical profession thereby acknowledge it as subordinate, giving it less importance than if independent.

To insist would compromise our dignity, and we should ignore the necessity of it. It is a confession of inferiority to even talk of recognition.

In 1893, we will, at Chicago, have an International Congress of Dentists, a strictly independent congress. We will then make our independence manifest to all the world. We will declare to all mankind that we are a whole, not a fractional part of any profession."

In the December number of the *International Dental Journal* is a letter from Dr. E. S. Talbot, explaining how dentists can become medical society men who only hold a D. D. S. or other dental degree. We quote the letter entire, preceding it with the official notice of the Treasurer of the American Medical Association:

AMERICAN MEDICAL ASSOCIATION.

[The following circular note, addressed to the *International Dental Journal*, seemed to require explanation, and we, therefore, sent it to Dr. E. S. Talbot, ex-president of the Section of Dental and Oral Surgery. His letter in reply accompanied it. In a note subsequently received he states that Dr. N. S. Davis, of Chicago, ex-president of the American Medical Association, and "father of the movement," said, "the letter covered the ground, and that he could not add anything to it."—ED.]

PHILADELPHIA, August 14, 1891.

MEMBERSHIP IN THE AMERICAN MEDICAL ASSOCIATION.—This is obtainable at any time, by a member of any State or local medical society which is entitled to send delegates to the association. All that is necessary is for the applicant to write to the Treasurer of the association, Dr. Richard J. Dunglison, Lock Box 1274, Philadelphia, Pa., sending him a certificate or statement that he is in good standing in his own society, signed by the President and Secretary of said society, with five dollars for annual dues. Attendance as a delegate at an annual meeting of the association is not necessary in order to obtain membership. On receipt of the above amount the weekly journal of the association will be forwarded regularly.

RICHARD J. DUNGLISON, M. D., Treasurer.

TO THE EDITOR:

DEAR SIR,—Your letter, asking my opinion in regard to membership in the American Medical Association, is at hand. In reply would say that there has never been a clear understanding among dentists in regard to the resolution adopted by the association in June, 1887. By this resolution (see August number of *International Dental Journal*, page 517) a person who has graduated from a dental college is recognized as a medical practitioner, and is entitled to mem-

bership in the American Medical Association, provided the school in which he graduated "requires of its students a standard of preliminary or general education and a term of professional study," etc. (See resolution.) The person must belong to a medical or dental society which has adopted the Code of Ethics of the American Medical Association. Having complied with these requirements, the D. D. S. is eligible to membership on an equal footing with the M. D. The question now is, what colleges have fulfilled these requirements? Although it is not so stated, it was intended that this resolution should include the graduates of such colleges or schools as Harvard, University of Pennsylvania, Ann Arbor, University of Chicago, and other schools that require of their students attendance upon lectures in medical colleges jointly with medical students, and pass the same examination as medical students in the fundamental sciences of medicine, such as anatomy, physiology, chemistry, pathology, and general surgery, omitting such studies as obstetrics, practical medicine, etc., and taking in their place didactic and clinical teaching in dental surgery. So far an exceedingly liberal construction has been put upon this resolution, but if the resolution remains in force in the association, it will probably not be long before a line will be drawn so that the graduate of no college except those demanding a thorough knowledge of the fundamental principles of a medical education will be admitted to membership. All that is required, then, is to join a medical society which has adopted the Code of Ethics of the American Medical Association, or have some dental society or club adopt the code of ethics, and a person becomes eligible to membership according to the circular of Dr. Dunglison.

I cannot understand when the best medical men in this country throw open the doors of the National Association to the better class of dentists, why they do not avail themselves of the opportunity and become scientists among scientific men. The medical men have met us more than half way and are glad to welcome us into their meetings.

Very truly yours,

EUGENE S. TALBOT.

CHICAGO, September 29, 1891.

It will be noticed that the first gentleman emphatically declares, and gives his reasons therefor that dentistry is an independent profession, and that until a higher dental degree is established that it must remain so. He predicts a great meeting in 1893 in Chicago, to be composed of dentists. Of course this is being provided for, and physicians will be welcome.

Now the second gentleman explains how a certain class of graduates of dental schools may become associated as members of the Medical Society by joining a local society that has adopted the code of medical ethics. He urges dentists to get dental societies to adopt the medical code and then come in as members.

Did it ever strike the latter gentleman that there is no provision for the entrance of a doctor of medicine into a dental society unless he or she were engaged in the practice of dentistry. It is a fact. The writer cannot comprehend how a dentist who is a graduate of

a dental college not connected with a medical college is the inferior in any sense, of the one who is a graduate of the college having the medical attachment. It is believed that none are looked down upon because they have in times past graduated at the Philadelphia, Pennsylvania, Ohio, Baltimore, Boston, New York, and other first-class independent colleges.

No dentist with any pride in his calling, a graduate of any such school could permit himself to become allied with any medical or dental society that would proscribe him from the rights and privileges of other members of the same society. Either the American Medical Association must do away with its "resolution" or make it broad enough to admit any reputable graduate of any reputable dental school, endowed, attached to an University or standing alone as an independent dental college.

The writer of the letter says "I cannot understand, when the best medical men in this country throw open the doors of the National Association to the *better class of dentists* (italics ours), why they do not avail themselves of the opportunity and become *scientists among scientific men*" (italics ours once more). If by joining a medical society or a dental society adopting the medical code, will make a dentist a scientist there will be such a flocking of dentists to the next meeting of medical societies that most of them will have to seek larger quarters, for there are twenty thousand dentists in the United States (nearly as large a number as there are of medical society members). The fact of the matter is that dentists are better entertained in dental societies, their interests are there, the bulk of their friends and acquaintances in a city will be found at a dental society gathering, the papers they read in most cases are not interesting to medical practitioners and the same may be said of those read by the aforesaid medical men. There is no reason in the world why dentists and doctors should not be on the most friendly footing in or out of societies, but to say that dentists can be made into medical men by "resolution" is now as it was at the time it was passed a piece of "buncombe" done for effect and it will gradually take its place with other unnecessary legislation—become a dead letter.

VOLUME V.

In issuing the present number of THE DENTAL REVIEW the fifth volume is completed. Our readers will pardon us for using valuable space for the purpose of briefly reviewing the work of the past

year. In 1890, when Volume IV. was completed, we thought that all we could do had been done, at least in the *amount* of reading matter presented, for we then exceeded by sixteen pages the amount published by any other dental journal, leaving the *quality* to be judged by the reader. It is true that in a measure this was due to the fact that in October of that year we published in one number the entire proceedings of the American Dental Association, held but two months before, instead of using the matter for "padding" and "filling in," as is too often the case with the productions of dentists when presented to dental societies.

This year, even without the voluminous and valuable proceedings of the American Dental Association, we are compelled not only to advance our own record of last year several pages, but outstripping even the leader of our contemporaries in the amount of matter presented to the reader. The list of original communications presented this year comprises (seventy-three) articles from the pens of the best and foremost American dental writers. The November number alone contained twenty articles, a number that we believe never to have been equaled by any journal anywhere.

When the transactions of the American Dental Association for 1890 were presented to the readers of THE DENTAL REVIEW within two months (a slight incident that has not occurred before or since), we thought all that practicing dentists, editing a dental journal could do, had been accomplished. But this year the proceedings of the Illinois State Dental Society, which adjourned May 15, were published within thirty days, the June number containing 178 pages.

The present number contains a carefully arranged table of contents, a biographical and general index, which will be found ample for the needs of the student, practitioner or investigator.

We gratefully acknowledge the many favors shown us by friends of the REVIEW throughout this and other countries during the year which is just drawing to a close, and in wishing the entire profession the compliments of the season, we ask a continuance of their good will the coming year.

THE NEXT INTERNATIONAL MEDICAL CONGRESS, 1893.

The meeting will be held in September, 1893, so says the *Medical Record*. The following sections have been provided :

Anatomy, Physiology, Pathology, Therapeutics, Clinical Medi-

cine, Surgery, Obstetrics, Psychological Medicine, Ophthalmology, Dermatology and Syphilography, Forensic Medicine, Hygiene, and DENTAL SURGERY IS NOT IN IT, as usual, without a petition or some sort of begging for a place. 1881, by petition; 1884, no section—a subsection in surgery was established; 1887, left out, but afterward by request made a section; 1890, provided for in the beginning; 1893, ——— unless by request. This is because there is not in all Italy an organized dental profession, and there is not, at this time, a dental department in any teaching body in the whole kingdom. Dr. John E. Grevers, of Amsterdam, once said in a letter to THE DENTAL REVIEW that there were countries in which it would not be possible, from the native talent alone, to organize a dental section. This prediction is about to be realized unless the foreigners in Italy take hold of the section and few if any of them hold the medical degree. It is unfortunate that the meeting in Chicago and the one in Rome should come so close to each other, but we will have to do the best we can to bear up against the inevitable.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

To the Editor of THE DENTAL REVIEW:

DEAR SIR—Only standing room could be obtained at the meeting of the First District Society this month. The present administration indicates its pulsating by its pull on young blood. This was fully manifested at the meeting and at the clinic. Nine-tenths of the attendance was of this class, and they brought no lack of interest. Everything is vibrating in the preparations for the coming anniversary in January. Who but “young ones” could offer the prospect of a clinic and exhibit, and bring forth *nothing* that has been seen heretofore. This can but be a relief in contrast with some former occasions. This is as it should be, yet over four thousand years ago a wise man said there was nothing new under the sun. In principle this is true, but things evolute. Antediluvians were nomadic, but nineteenth century people live in houses that are high up to seventeen stories. The first chappies walked, but now they go by horse a mile in 2:08¼, by rail in less than a minute. What electricity will do no one can now predict. Prospectively it is to play a large part in the dental office, judging

by the various devices on exhibition at every coming together of practitioners. This was working so at the monthly clinics. An attendance of seventy-three evinced a decided interest in the electrical exhibits. Many of them looked much alike, but were really unlike in application. So much so, it could only be described by illustration or a look at them. If only some one could apply the gold deposit to cavities in teeth. Why not? So much is now said about "acids" in the mouth, this might be utilized. Never has there been a more attentive audience than that which listened to Dr. Rufus Stansborough, who gave a paper, illustrated, on "Artificial Crowns on Natural Roots." It was very nicely arranged in all its parts, bringing him a well-deserved tribute of praise from all. It would be impossible to give an adequate description of it. He gave a full description of the entire method, by artistic cuts, of the tools and the crowns in all their various adjustments. The only drawback will be the expense for being able to produce it in everyday practice. But none too much can be said in commending skillful ambition. Dr. Ryneear also read a descriptive paper, aided by illustrative cuts in artistic taste. These were furnished each one present, by which they could readily follow the description of the inventor as he detailed it by his paper. This gave additional interest. Dr. Ryneear claims for his crown a greater simplicity, and hence greater economy. He made a decided point when he said that nine-tenths of all the crowns used for single settings were the improved Logan crowns, clearly showing that the need of the profession was a crown covering the largest demand and the most economical. Dr. Van Weort advocated the method of constructing the porcelains with a dove-tailed groove in the back. He also illustrated his device by which he could readily place the platinum backing into the groove and after being adapted to bridge or foundation of the crown; in case of breakage a new porcelain could be adjusted in ten minutes. It cannot be overlooked that the popular crown, so to speak, must be one that will be both economical and readily repaired. One would almost think that we had reached this requisite in the multiplicity of devices. Yet the circumstances will direct the selection, and while it will occasionally make choice of the most complicated but for artistic taste and strength they can only be secured by such a choice.

Much interest is evinced in the new field of activity placed in Dr. Barrett's hands by the editorship of the *Advertiser*. It is pre-

dicted that it will not be a failure under his care. He is surely not a novice in such work. He has proved himself an editor of energy and strength, and he is not one that will not be wise enough to steer clear of any little inconsiderations that he may have met formerly. His Journal will be popular in the Middle States at least; and we think also in the New England States. What a mistake that New England does not have a mouthpiece. They have both money and brains; "To whom much is given, much will be required." Have they not liberally received? Even New York city could honor itself by a Journal, and we predict it could sustain a weekly rightly planned and conducted. Chicago certainly has the courage of its convictions and the REVIEW speaks loudly and praiseworthy for results. It is a misfortune that men do not have more faith in meritorious service. Seeking to do well, is fully half assurance of success at the start.

Dr. Jack was trumps at the Odontological Society this month. He gave a very interesting detailed account of his daily management of practice in Philadelphia. Dr. Jack's reputation is well known for faithful and skillful service. He certainly impressed all that heard him that one practitioner had supreme control of his clientèle. He is the personification of systematic order. The pursuance of such a course for a quarter of a century has made his system as perfect an one as one could hope to achieve. "Practice makes perfect." Evidently he has so persistently pursued his methods that any seeking his services fall cheerfully into his line of action. We do not think the Dr.'s methods will become universal, but the paper was full of good points, and can be adopted by the younger portion with profit. He remarked at the beginning that he did not expect to make much impression on *older practitioners*, but he did think that he could be helpful to young men. Dr. Kingsley's remarks upon the paper were timely, as the matter of fees were by inference brought out by others. He said he thought we should consider distinctively our position from the professional standpoint. We are not dealing in commerce, selling muslin at $9\frac{1}{2}$ cents per yard. He asked, was it all there was to dentistry, boring holes in teeth, crowding materials into them? He illustrated his views by stating an experience lately. A lawyer had put his child into his care for correcting a deformity, which he succeeded in doing very much to the satisfaction of all concerned. In this he did not make so much strain on his inventive ability

as with many others, but he had proved his skill. Now, what should be his fee? The father of this patient had lately received \$50,000 for a counsel fee, and later still another of \$200,000.

He considered that this lawyer based his fees purely from a professional standpoint, thus placing his skill of brain against the importance of the counsel needed. Taking this view of the case, Dr. Kingsley decided to place himself in the same position, and accordingly he presented a bill twice as large as any fee he had ever made. His Secretary thought it a mistake, he thought not. He had never met the father of the child. Within two days he was announced, and the Dr. says he went to the parlor with a little tremor, for he did not know but he would be told that his bill was outrageous. But instead he was met very graciously with thanks, and with expressions of admiration for the skill so manifest and with much alacrity presented the Dr. with his cheque for the amount. It is our opinion that this will carry its lesson to every practitioner that has the true professional idea. We think it high time that professional fees should be deemed by skillful men above the ordinary and as we have said in a previous letter. Demand and skill is the true basis for the measure of our fees. Dr. S. G. Perry presented some decidedly improved cervix clamps. The jaws are so constructed as to be made applicable to all variations of surfaces. The President, Dr. Dwinelle, gave a resumé of the work of the year during his administration, which evidenced gratifying results. In this he paid a deserved compliment to Dr. Davenport for his six years of valuable services as society editor.

The question of copper used in the mouth is being agitated in this section. Copper wire for supporting loose teeth either for temporary use, or more of permanency, also for what might be termed supports on the palatal and lingual surfaces of teeth, in connection with wires. Also for a denture foundation, and also for crowns. We met a dentist that does a large crown and bridge practice today; he remarked that he had placed a copper crown in the mouth within a week. Our first use of copper wire for supporting loose teeth was suggested to us by Dr. Atkinson about two years since. We have found it more satisfactory than gold or platinum. It was much tougher and more ductile. It is claimed by some, that there is a therapeutic effect resulting from the contact of the wire and moisture, producing a sulphate of copper; on this theory the thought is that under some conditions of the mucous membrane it

may prove favorable as a base plate. So far as our own experience and observation goes nothing objectionable has appeared. We have suggested to Mr. Clark, the deposit plate agent, the idea of depositing a copper base instead of silver, querying whether it would not prevent the spotting of plates by oxidation, or what not, as so often occurs in the gold and silver deposit plate. To get the advantage of the copper closely applied to the membrane we have suggested leaving the under surface free of gold. We may be able to inform your readers what the result will be. In the meantime it may be well for others to improve on the idea. Dr. Dwinelle has out of the fertility of his inventive genius already devised the looping the wire for binding. Taking two pieces say of four inches or more long, bend each of them in the form of a half link and hang them together and solder them with just enough solder to catch. Dr. C. M. Richmond gives the simple method of soldering. He dips one of the loops into moistened borax and places a small piece of solder on the wire and flows it by a Bunsen burner. Then dipping the second loop into the borax and hangs the two loops together over the Bunsen light and connects the two.

Nothing could be suggested for less bites at a cherry. Doing this will be believing after once seeing. This is so in seeing the November number of the REVIEW. It is in fine form, and bang up; biggest show on earth, they all say, Amen! in this section, Chicago, we hope, will not covet all the good things. They have hooked on to Dr Barrett and will doubtless reel out all the pathology of him they can, and what else they cannot get in that way, they will find in the *Buffalo Advertiser* after January 1892. Dr. Barrett is not an easy body to get out of sight; he is not only big in avoirdupois but in energy. No doubt he will discover the weak spots of those in the Windy City and may find a place for them in his "items of interest," for it is an adage of truth that we do not know people until we live with them. Possibly he will, or can, give us a hint of how the Columbian Congress is going to look to one who is looking at it on the spot. We have read of one enthusiastic *Journal* reader during the last month. He wants Bro. Welsh to extend his usefulness into *weekly* items and charge him ten dollars a year for a copy. This is an encouragement for Journalism. Think how cheap we are getting our readings now, as compared with long back. We are comparing the REVIEW with the early editions of the American Dental Journals. They were five dollars a year, and each

number was plump. It would interest young practitioners to look over these earlier efforts. One will find many ideas advanced then, that we are prone to think original now; yet, if they are found useful they get a more progressive notice and are more readily utilized.

We are reminded in reading an article in the November number of the *REVIEW*, that a better attention to past literature would make the author more enlightened. The impression is given that contour work was introduced after 1859, following the advent of the use of crystal or adhesive gold. Dr. Dwinelle's articles are referred to in this connection, but these were in print in 1855. It is true that Dr. Atkinson did become an enthusiast in the use of cohesive gold and contour filling, together with the use of the mallet, and by the fraternal movement which he generated by his great fraternal nature, and in this connection by clinical demonstrations, which was a new move in professional growth. Altogether an impetus was given that has brought into large practice the ideas so ardently advocated in 1855. One sows and another waters, and we are reaping. Truly this is a just reward to the sower. In this connection I think it but just to mention that we have seen nineteen fillings that were made thirty-five years since in one month by Dr. Dwinelle. They were all made of sponge gold and by hand pressure, and as it will be seen, before engines, clamps, mallets and rubber dam.

These operations are all of the contour series; one of the most extensive operations is upon a superior central incisor, and pulpless. We have seen this work during the last month. It being of such a revelation to us, and so nearly equal to anything we have ever seen, we emphasized this remark, we wished that a thousand practitioners could see it. We can say that a few New York practitioners have seen it. Dr. S. G. Perry, one of Dr. Dwinelle's favorite friends, said he had never seen anything that excelled this work. It looks so clean and beautiful on its surface as to appear like molten gold. All the operations are above the average in size and difficulty. As the *REVIEW* has advocated saying kind things of the pioneers in dentistry, this notice will be timely. As it is Thanksgiving eve while we are writing this letter, we close by saying we are thankful for the helpfulness that has come to us as a profession by these conscientious examples. Ex.

P. S. In the November number, letter No. 2, page 924, it should be, Dr. Rynear presented a new devise for Porcelain Crown, not Dr. Brown.

REVIEWS AND ABSTRACTS.

IS DENTISTRY A DANGEROUS PROFESSION?

[Last month we published an article on this subject and now we take pleasure in quoting a reply thereto which offers much food for thought.—ED.]

IS DENTISTRY A DANGEROUS PROFESSION? A REPLY.

By ——— L. D. S.

Under the above heading Dr. Dudley W. Buxton discusses very ably, and very kindly, some of the incidents in the daily routine life of the dentist which he thinks have an adverse reaction upon his health and comfort.

He takes as his example, the man who, full of work, is allowing it to absorb his whole being, and gradually kill him, or at all events make his life burdensome by reason of his success. But there is perhaps, here and there, a case of insomnia, of neurasthenia, or nervous irritability, which arises from anxiety and care—the anxiety of not knowing where your next patient is to come from; how you are to pay your rent and taxes; how you are to provide for your wife and increasing family—a family perhaps not increasing in number but in expensiveness, and especially so since the demand for a higher dental education causes one to scan the tables of hospital and lecture fees with grave consideration. The Dental Act will, we hope, in time work miracles for the next generation, but it does not do much to protect us from the advertising and cheap practitioners who infest our towns. We who have our L. D. S. diploma, and belong to the British Dental Association, must at any rate, keep ourselves respectable, live in good houses, abhor all that which should be despised as unprofessional, while we sit and moan that our practices are being filched away, and our income growing less. I have been frequently told so by some of the older practitioners at our B. D. A. meetings, and I believe it to be perfectly true.

A few years ago, a traveler for a highly respectable dental supply house told me he had been requested by the firm to call upon the chemists in the town and suburbs, to solicit their orders, but he thought it a waste of time to do so. On returning to London, he was asked how it was he had not obeyed his instructions, and he replied he could not afford the time, and it was of little use. He was at once informed that the chemist was the dentist of the future,

and unless he did look them up they (the firm) would be compelled to get another traveler.

I ceased to do business with that firm on the death of that loyal traveler, but have little doubt the houses all make it a purely business concern, and supply the just and the unjust with their richest blessings with equal politeness.

It is hard—very hard lines for a man, who is a capable dentist, perhaps holding many public appointments to be obliged to see himself thus being elbowed out of the way, in order that he may maintain the status of his profession. No ride on a cycle or horse-back or walk before breakfast will heal his nervous irritability, and he simply dreads to ask for his bank book. Six or eight hours hard work in his surgery or workroom would be the finest tonic for him, provided he got his fees down when the work was completed—and did not have to wait for years, and finally fight for them in the county court. When I think of the wonderful progress dentistry has made, or is said to have made, as a profession at our after dinner meetings, when we are being flattered by our guests, and we feel like millionaires basking in the sunshine, I sometimes wonder if we have not been going it too fast, and if, after all, in the sweet by and by, the public will not stick to the man who can do his work, rather than run after the newly-fledged chicken of many letters, and more science than practical knowledge. I suspect many dentists, who in the nature of things, would have liked their sons to have succeeded them, and who have ample opportunities for teaching them all the really essential parts of their profession, will not be able to afford the purely ornamental adjuncts, of which we are hearing so much just now—the peacock's feathers—and will be driven to find other and less expensive occupations for them—or, on the other hand, if they determine to go the whole hog, come what come may, will eat the bread of carefulness, and sleep the night with open eyelids. This all seems a mournful dirge of dental neuralgia—but I doubt not, and I am sorry, that it will find many an echo—it is the same with the medical—the same with the clerical profession—we are hanging ourselves with our restrictions, and we cannot afford to pay for the rope. By all means let us have the Provident and Sick Fund—Dudley Buxton suggests—let us try and keep off the Benevolent Fund, and help it, and let us keep our spirits up, but after all it is the pneumogastric nerve which has a lot to do with the “dangerous profession of a dentist.”—*Dental Record*.

VALUATION OF OIL OF CLOVES. — H. Thoms recently read a paper on this subject before the Society of German Naturalists and Physicians, from which we take the following portions :

It may be safely assumed that *eugenol* is the principal valuable constituent of oil of cloves. This is at least the case so far as the therapeutic properties of the oil are concerned, for it is the eugenol which has been found quite efficacious (in form of benzoyl-eugenol) as a remedy in tuberculous affections. So far as the aroma of the oil is concerned, there is, indeed, another constituent which has a share in it, namely, the sesquiterpene which accompanies the eugenol.

Up to the present the methods for separating eugenol were so circumstantial that they could not well be used for a quantitative estimation. Thoms has succeeded in finding a new method which is very simple and easy, namely, by converting the eugenol directly into benzoyl-eugenol, for which purpose it is not even necessary to extract it first from the oil.

This compound, benzoyl-eugenol (or benzoate of eugenol), when pure, is a colorless and odorless solid ester (compound ether), in form of neutral crystals, of a faintly bitter taste, insoluble in water, easily soluble in hot, difficultly in cold alcohol, also soluble in chloroform, ether and acetone. It is prepared by mixing eugenol with solution of soda or potassa, whereby the hydrogen of the hydroxyl group in the eugenol is replaced by the alkali metal. If now an equivalent quantity of benzoyl-chloride is added and the whole shaken, the formation of benzoyl-eugenol takes place quite rapidly, with evolution of heat. Upon cooling, the oil which has separated congeals, and can be obtained in colorless crystals by recrystallization from alcohol.

In order to show that the resulting product may be taken as a safe basis for the quantitative estimation of eugenol, the author quotes the following example, which at the same time shows the details of the process with quantities of ingredients :

Five grammes of eugenol, contained in a beaker holding about 150 C.c., are mixed with 20 Gm. of solution of soda containing 15 per cent NaOH, and then 6 Gm. of benzoyl-chloride are added. Both of the latter substances are used in excess, which is advisable. The whole is well agitated, which causes the mixture to become quite hot. After a few minutes the reaction is completed. When the mixture is cold, 50 C.c. of water are added, a gentle heat then

applied until the solidified ester has again separated in form of an oil, and the whole then allowed to cool again. The supernatant clear liquid is now filtered off, 50 C.c. of water are again added to the crystalline cake, heat applied until this fuses, the mixture cooled, the liquid filtered off, and the washing repeated once more. This washing removes the excess of soda, as well as the sodium salt.

Any crystals adhering to the filter are returned to the beaker, the latter with contents dried at 101° C. and weighed.

Every 5 Gm. of eugenol [$C_6H_5.C_3H_5.OCH_3.OH=164$] correspond to 8.171 Gm. of benzoyl-eugenol [$C_6H_5.C_3H_5.OCH_3.O.CO.C_6H_5=268$]. The amount of the latter obtained by Thoms was 8.11 Gm., or 99.25 per cent of the theoretical yield.

On applying this process directly to oil of cloves, provision must be made to get rid of the sesquiterpene. This is done in the following manner :

After a portion of 5 Gm. of oil of cloves has been treated exactly in the manner just described for pure eugenol, the crystalline cake finally obtained is dissolved in a definite amount of warm alcohol of known strength, the solution allowed to crystallize, and the mother liquid separated by filtration at a definite temperature. The residue on the filter is dried at 101° C., and to it is added the weight of the benzoyl-eugenol remaining in solution in the mother liquid.

This process is given by the author somewhat more in detail as follows :

Place the crystalline cake of benzoyl-eugenol finally obtained, while still moist, into a beaker, add at once 25 C.c. of alcohol of 90 per cent, warm it on a water bath, rotating it until solution has taken place, then remove the beaker from the water bath and continue rotating until the benzoyl-eugenol has separated in form of fine crystals, which requires only a few minutes. Now cool to 17° C., transfer the crystalline mass to a filter of 9 Cm. in diameter, and receive the filtrate in a graduated cylinder. About 20 C.c. will pass through. Enough alcohol of 90 per cent is then poured upon the contents of the filter to make the whole filtrate measure 25 C.c. The moist filter with contents is then transferred to a weighing bottle (in which the filter had previously been weighed at 101° C.) and the whole dried at 101° C. to a constant weight.

Twenty-five cubic centimeters of alcohol of 90 per cent dissolve,

at 17° C., 0.55 Gm. of pure benzoyl-eugenol. This amount, therefore, must be added to the weight of the dried residue.

On examining a number of different specimens of oil of cloves by this method, the author obtained percentages of eugenol varying between 76.8 and 90.64, the average being about 80 per cent. It was also noticed that a higher percentage of eugenol was accompanied by a rise in specific gravity.—After *Berichte d. pharm. Ges.*, 1891, 278.

NECROSIS OF THE MAXILLARY BONES—A SEQUENCE OF MEASLES.

BY JAMES F. MCCARTHY, M. D., DUBUQUE,

On November 27, 1887, was called to see Peter L., residing with his parents at 2310 Couler Avenue. The boy was eight years old. Family history good. Had three sisters and two brothers all in good health. Twelve hours before I was called his mother noticed a rash on his face and chest, and I found a mild form of measles fully developed.

The diagnosis was made and I ordered that no medicine be given, but should complications arise to advise me of such when they made their appearance.

Three days later, on November 30th, was sent for and informed that the boy had severe pain in his left ear. Upon examining the patient, I found the left jaw swelled, somewhat red and complained of severe pain in his left ear and jaw. Applied dry, hot applications to the jaw and ear and administered five minims of the tincture of opium.

Temperature 103½, pulse 140 and respiration 54 per minute; constipated. Gave compound laxative powder to relieve constipation. Applied a jacket poultice of greased flannel covered with oiled silk, as capillary bronchitis was well marked in both lungs. Gave internally quin. sulph. in powder, carbonate of ammonia, whiskey and beef tea.

December 1. Temperature 103, pulse 150, respiration 64. Ear suppurating and pain relieved. Jaw larger than yesterday and more painful.

Noticed the two incisors and the canine tooth of the left upper jaw protruding from their sockets; patient very weak and unable to open his mouth over one-half inch.

December 2. Condition the same; treatment continued.

December 3. Temperature 103, pulse 150, respiration 60. The three mentioned teeth loose and easily removed. Upon examining the bicuspid, the incisors and canine being previously removed, found them loose, odor exceedingly disagreeable and very little suppuration, and what there was was swallowed except when syringed out with a bichloride solution 1-2000.

December 4. Removed the remaining teeth in the left upper jaw.

December 5. Temperature 100½, pulse 120, respiration 38 ; feels some better.

December 6, 7, 8 and 9. Condition continued the same and he took liquid nourishment freely.

December 12. Temperature 99, pulse 120, respiration 28. Face very much swollen, left eye closed and turned toward the nose. Could not open mouth sufficiently to allow a careful examination to be made, but discovered a large piece of loose bone, supposed it to be the alveolar process of the upper jaw. Gave pot. iod. with tonics, Took liquid food freely.

December 13. Condition improved.

December 24. Temperature 99, pulse 120, no cough ; takes nourishment well in liquid form ; sits in rocking chair a portion of the time and unable to stand. Found all the teeth in the left side of the lower jaw except the last bicuspid loose.

December 31. Swelling of face reduced and patient feels stronger.

January 17. With the assistance of Dr. Bigelow administered chloroform ; forcibly opened the mouth, grasped the bone with forceps and removed it. The left superior maxillary was removed from the median line to the zygomatic fossa, including all the alveolar process and up to the infra-orbital foramen on the facial surface and to the palate bone on the internal surface, leaving only the orbital surface. The palate bone was left intact.

February 6. With the assistance of Dr. Minges removed the alveolar process of the left side of the lower jaw, leaving the last bicuspid, although removing a portion of the alveolar process surrounding it.

May 1, 1888. I found the boy with his eye straight, no deformity of face except when attempting to laugh or whistle his lips would draw toward the left. The superior maxillary was reproduced and three teeth were making their appearance—one incisor one canine and one bicuspid.

In the lower jaw all the old teeth that were removed are replaced by new ones ; the old bicuspid still remaining.

This form of necrosis occurs more frequently in children from three to eight years old, and is a sequel of the eruptive fevers, more particularly scarlet fever. It is more likely to occur at this period of life, when nature makes its greatest demands to supply nutrition for the removal of the temporary and to supply nourishment for the permanent set of teeth.

There are cases on record where the bony structures are reproduced (especially the inferior maxillary) but nowhere do I find where teeth have been reproduced in the upper jaw. Nor can I find any account where the superior maxillary is replaced.—*Transactions Iowa State Medical Society.*

DENTAL MEDICINE, A MANUAL OF DENTAL MATERIA MEDICA AND THERAPEUTICS. By F. J. S. Gorgas, M. D., D. D. S. Fourth Edition Revised and Enlarged. Cloth, \$3.50. Philadelphia: P. Blakiston, Son & Co. Chicago: W. T. Keiener, 96 Washington St.

The fact that a fourth edition of Prof. Gorgas' Dental Medicine has so soon been called for is an evidence that it fills a want which no other work of this nature can supply. The works on General Materia Medica Therapeutics are lacking in special formula and directions for the uses of medicines in special diseases, particularly those coming under the notice of the dental surgeon. Perhaps another reason for the rapid exhaustion of editions is that there are no late works on dental medicine meeting the needs of the student in a dental college. Many additions have been made to the volume, increasing its bulk, frequently, without much apparent regard for great conciseness. The author is a ready compiler and little that is new escapes his notice. We do not feel compelled to criticise the arrangement of the work or the mass of material between the covers, because nowhere else can be found so much valuable matter relating to dental therapeutics in any language. We take pleasure in recommending it to students, in college and out, who are interested in the latest discovery of new drugs and their application.

SYLLABUS OF THE COURSE IN SURGERY AT THE COLLEGE OF PHYSICIANS
AND SURGEONS, CHICAGO, ILL.

[This Syllabus is so concise that we think it worthy reproduction in our pages.]—ED.

DIDACTIC COURSE;—TWELVE HOURS A WEEK.—THE PRINCIPLES OF SURGERY.

I. General Considerations. Definition of Surgery. A surgical operation. Indications,—absolute, relative, contra-indications. Preparations for an operation. Forensic considerations. FENGER.

II. Anæsthesia. The general and local anæsthetics. Chloroform narcosis. Ether narcosis. Other general anæsthetics. Technique of chloroform and of ether narcosis. Accidents, symptoms, treatment, prophylaxis. Local anæsthetics. FENGER.

III. Hæmostasis. Methods of arrest of hæmorrhage during an operation. The Esmarch bandage and band. Position. Emergencies. Methods. PALMER.

IV. The antiseptic operation. Principles of antiseptic surgery. Preparations for the antiseptic operation. Errors and accidents during the antiseptic operation. Danger of antiseptics. Sublimate poisoning. Carbolic acid poisoning. Iodoform poisoning. After-treatment of the antiseptic wound. The greatest dangers of death after the antiseptic operation. FENGER.

GENERAL SURGICAL TECHNIQUE.

A. Different methods of dividing tissues. 1. The bloody method of separating soft tissues with the knife. Different forms of knives. Accessory instruments, forceps, directors, sounds. The use of the scissors. Puncture of soft tissues. 2. The so-called bloodless method of dissection. The ligature, the cautery, the galvanocaustic loop. 3. The division of bone. The chisel, the saw, the drill, the osteoclast. PALMER.

B. The methods of arresting hæmorrhage. Ligature of blood vessels. Artery forceps. The antiseptic ligature (permanent). The old septic ligature (temporary). Torsion. Temporary application of forceps. Compression. Lamponade, temporary, permanent. The cautery. Hot and cold irrigation. Suture of wounds as hæmostasis. Old methods of hæmostasis. Tempory and provisional hæmostasis. PALMER.

C. The care of the secretion of a wound. Necessity of or indication for drainage. Different methods of drainage; the open wound, the aseptic or antiseptic tamponade, tubular drainage, temporary drainage. Technique of drainage with the gum tube. Absorbable drainage tubes. Glass and metal drainage tubes. Capillary drainage. Catgut threads. The wick of glass, cotton or asbestos. Skin puncture of Esmarch and Neuber. Canalization of Kocher. The organization of the clot and healing under the aseptic blood scab without drainage, as proposed by Schede and Halsted. PALMER.

D. The coaptation of tissues. The suture. Disinfection of the wound and its neighborhood antecedent to suture. Suture of soft parts. The temporary suture. The permanent or buried suture. Different materials used as suture. Suture of nerves, tendons, periosteum and fascia. Instruments used in making sutures. Other coaptation devices. Secondary suture, with small pincettes. Suture of bone. PALMER.

VI. Amputations, exarticulations, resections, and arthrectomy. Definition. Preparations. Instruments. Methods. History of methods. After-treatment. Wound infection. Atrophy of muscles. Neuromas and neuralgia of the stump. Artificial limbs. Principles. Favorable and unfavorable locations and conditions for same. PALMER.

VII. Operations for defects of tissue. Plastic operations. Transplantation. To supply defects of skin. General principles applying to defects of skin—to transplantation. Method of Reverdin, of Thiersch. Transplantation of the skin, hair and mucous membrane of animals. Plastic operations on other tissues—muscle, nerves, tendon and bone. PALMER.

GENERAL SURGICAL DRESSING.

I. The antiseptic and aseptic dressing. Theory and clinical teaching. FENGER.

II. General rules for the application of dressings and bandages. The different kinds of bandages, and different methods of application. The application of bandages to different parts of body. Technique. PALMER.

III. The position of the patient. Immobilization operations, splints and casts. Methods of extension. PALMER AND HOADLEY.

GENERAL SURGICAL PATHOLOGY AND THERAPY.

I. The surgical pathology of tissues.

(A.) Fixed tissues. 1. Considerations of the anatomy, physiology and pathology of the cell from a surgical standpoint. 2. The surgical relations of the progressive and retrogressive processes. 3. Traumas: (a) Their nature and extent. (b) Their normal repair. (c) Their morbid or complicated repair. (d) By fault of the subject, on account of (I) imperfect function of the cells; (II) imperfect nutrition; (III) imperfect enervation.

(B.) For external interferences: (I) Improper physical environment; (II) improper chemical environment; (III) vital interference—parasitism. Reaction of tissues to (1) animal parasites: (a) Arthropoda, (b) vermes, (c) eozoa. (2) Vegetable parasitism: The reaction of tissues to vegetable parasites—(I) saccharomycetæ nonpathogenic. (II) Hyphomycetæ, (1) nonpathogenic; (2) pathogenic. (III) Schizomycetæ, (1) nonpathogenic; (2) pathogenic. Suppuration (inflammation), various forms: Erysipelas, gonorrhœa, pneumonia, diphtheria, anthrax, tuberculosis, syphilis, leprosy, glanders, rhinoscleroma, etc.

Neoplasms: Epiblastic, mesoblastic, teratomata.

(B.) Blood and lymph: (I) Anatomy, chemistry, and physiology of the blood and lymph. (2) Shedding of blood—coagulation, thrombosis. (3) Regeneration of blood. (4.) Diseases of blood.

(C.) Surgical conditions arising from (1) errors of development, growth and nutrition; (2) errors of environment and habit. VAN HOOK.

II. The normal course of repair in simple, uninfected wounds. Diagnosis, prognosis and indications for treatment.

Repair. Shock, ferment intoxication, delirium tremens, delirium nervosum. Anæmic necrosis, dry gangrene, thrombosis and embolism (uninfected). Burns. Chemical poisons. Stings and serpent bites. Arrows. Kinds of wound.—incised, punctured, contused, gunshot wounds. Special indications and methods of treatment. FENGER.

III. The clinical history of wound diseases. Diagnosis, prognosis, and indications for treatment. Sources of danger to the wound, methods of infection. Forms of infection. Erysipelas, suppura-

tion, tetanus, etc. Progress of infection. Intoxication, pyæmia, septicæmia. HOLMES.

IV. The surgical manifestations of the chronic infectious diseases. Leprosy, tuberculosis, syphilis, and actinomycosis. HOLMES.

V. The Neoplasms. Classification. Theory of the origin of tumors. Development, clinical history and indications for the treatment of the different forms of tumors. FENGER.

THE PRACTICE OF SURGERY.—SURGERY OF THE HEAD.

I. The injuries and diseases of the scalp. FENGER.

II. The injuries and diseases of the vault. FENGER.

III. The injuries and diseases of the brain and its adnexa. FENGER.

IV. The injuries and diseases of the soft parts of the face. FENGER.

V. The injuries and diseases of the nose. 1. The outer nose. FENGER. 2. The inner nose. WAXHAM.

VI. The injuries and diseases of the jaws. HARLAN.

VII. Injuries and diseases of the mouth, pharynx and larynx. WAXHAM.

VIII. Injuries and diseases of the ear. BETTMAN.

IX. Injuries and diseases of the parotid and salivary glands. FENGER.

X. Injuries and diseases of the eye. BETTMAN.

SURGERY OF THE NECK.

I. Injuries and diseases of the neck. FENGER.

II. Injuries and diseases of the trachea and larynx. WAXHAM.

III. Injuries and diseases of the œsophagus. FENGER.

SURGERY OF THE THORAX.

I. Injuries and diseases of the thorax. HOLMES.

II. Injuries and diseases of the breast. HOLMES.

SURGERY OF THE SPINE AND CORD.

I. Congenital and acquired deformities of the spinal column. HOADLEY.

II. Diseases and injuries of the spine and cord. FENGER.

SURGERY OF THE ABDOMEN.

I. Injuries and diseases of the abdominal wall. Injuries, inflammatory processes, tumors of the abdominal wall. Cysts of the uracus. Echinococcus. Varices of the abdominal wall. STEELE. Diseases of the cord in the infant. EARLE.

II. Injuries and diseases of the peritoneum. Subcutaneous injuries of the abdominal organs. Penetrating wounds of the abdomen with injury of the abdominal organs. Ligature of the abdominal aorta, and of other blood vessels. Inflammation of the peritoneum. Tuberculosis. Tumors. Retroperitoneal tumors. Puncture of the peritoneal cavity. Incision. Extra peritoneal laparotomy. STEELE.

III. Injuries and diseases of the liver, the gall-bladder, the pancreas and the spleen. Injuries of the liver. Inflammation of the liver. Abscess of the liver. Tumors of the liver. Echinococcus. Injuries of the gall-bladder and duct. Calculus formation. Inflammations. Tumors. Extirpation or incision of the gall-bladder. Establishment of billiary fistulæ. Injuries of the pancreas. Inflammations. Hæmorrhages. Pancreatic calculi. Tumors of the pancreas. Malformation of the spleen. Injuries and inflammations of the spleen. The wandering spleen. Tumors. Cysts. Operations. STEELE.

IV. Surgery of the stomach and intestines. Malformations and deformities of the stomach. Injuries of the stomach. Diseases of the stomach. Operations on the stomach. Malformations and deformities of the intestinal canal. Inflammation of the intestines. Tumors. Obstruction of the intestines. Operations on the intestines. Suture, excision, anastomosis, the formation of fistulæ. STEELE.

V. Injuries and diseases of the rectum and anus. Examination of the rectum. Malformations and deformities. Injuries. Foreign bodies. Inflammatory processes. Furuncle. Proctitis and periproctitis. Tumors. Stricture. FENGER.

VI. Hernias. Anatomy, origin and appearance of hernia. Symptoms, course and fate of hernias. Reducible and irreducible hernias. Strangulation of hernias. Diagnosis, prognosis and indications for treatment of reducible hernias. Trusses. Treatment of irreducible hernias. Diagnosis, prognosis and indications for the treatment of special forms of hernia, the inguinal, the crural, the umbilical, the obturator, the ischeal, the perineal and the retroperitoneal hernias. STEELE.

VII. Surgery of the kidney and ureter. Malformations and deformities of the kidney. Wandering kidney. Injuries and inflammations of the kidney. Suppurative nephritis and perinephritis. Tuberculosis. Syphilis. Tumors. Parasites. Calculi. G. F. LYDSTON.

VIII. Injuries and diseases of the urinary bladder. Methods of investigation. Malformations and deformities. Foreign bodies. Inflammations, suppuration, tuberculosis. Tumors. Injuries. G. F. LYDSTON.

IX. Injuries, diseases and malformations of the male urethra and penis. G. F. LYDSTON.

X. Injuries and diseases of the scrotum and its contents, the cord and the seminal vesicles, the prostate and the glands of Cowper. G. F. LYDSTON.

XI. Injuries, diseases and malformations of the female urinary and sexual organs. JACKSON.

XII. Injuries and diseases of the pelvis. Fracture of the pelvis. Luxation and displacement of the sacroiliac and pubic synchondrosis. Injury of the soft parts of the pelvis. Inflammation of the pelvic bones and joints. Tuberculosis. Coccygodinia. Tumors of the pelvis. Congenital sacral tumors. HOLMES.

SURGERY OF THE EXTREMITIES.

I. Fractures and dislocations throughout the whole body, except the head and neck. General division of fractures. Ætiology of fractures. Semiology and diagnosis of fractures. Repairs of fractures. General prognosis. General indications for treatment. Faulty union of fractures. Fractures of scapula, humerus, radius, ulna, radius and ulna, carpi, metacarpi, phalanges, pelvic bones,

femur, patella, tibia, fibula, tibia and fibula, tarsi, metatarsi, phalanges.

General considerations of dislocations. Dislocations of clavicle, at the shoulder, the elbow, the wrist, the knuckles and the phalangeal joints; at the hip, at the knee, at the ankle, at the tarsal joints in the foot. Congenital dislocations. STEELE.

II. Diseases of the extremities. HOLMES.

III. Orthopedic surgery of the extremities. HOADLEY.

BOOKS RECEIVED.

Pearson's vest pocket appointment book for 1892. R. I. Pearson & Co., Kansas City, Mo. Price 75 cents.

Leonard's Materia Medica and Therapeutics. The Illustrated Medical Journal Co., Detroit, Mich. Price \$1.00.

Lindsay & Blakiston's Visiting List for 1892. P. Blakiston Son & Co., Philadelphia, Pa. Price \$1.00.

PAMPLETS RECEIVED.

Defective Personal Hygiene as it Affects the Teeth. (Presented in Section IV. (Infancy, Childhood and School Life), of the Seventh International Congress of Hygiene and Demography.) By George Cunningham, M. A. (Cantab.), D. M. D. (Harvard), L. D. S. Eng. Reprinted from "The British Journal of Dental Science."

PRACTICAL NOTES.

FILLING TEETH.

BY A. B. C. D. E. AND G. (F. LEFT OUT).

SYMPOSIUM TWO.

A.—After you have decided to fill a bicuspid tooth, say in the mouth of a person twenty-five or twenty-seven years of age, with the pulp alive and not exposed, what would be the first thing you would do?

E.—Well, I should separate it first.

A.—Would you do that before you chiseled the cavity open?

E.—Yes.

A.—Don't you think it would be easier to take a chisel and

open the cavity and then put in your materials for separating, rather than to separate first and cut afterward?

E.—I am always afraid of sensitiveness which sometimes occurs in opening the crown in anyway.

C.—You reach the sensitiveness afterward anyhow. I think the doctor means to open it up with a chisel, to get the cavity clear, and then separate.

E.—It all depends what you put in for separating and the length of time you take to separate. If you use gutta-percha there would not be much danger of sensitiveness; but usually I separate teeth as quickly as possible.

A.—What do you separate teeth with?

E.—I use rubber, wood and gutta-percha, For quick separation I prefer rubber.

C.—I have not used rubber for a long time, except, perhaps, a piece of rubber dam. Waxed tape is the best material for separating teeth.

G.—I do not think I have found anything that is equal to gutta-percha.

A.—What kind of gutta-percha?

G.—Red gutta-percha. It separates kindly and quickly and you do not have any unpleasant soreness. The waxed tape is in some cases unsatisfactory. If your patient happens to go three or four days over the appointed time, it becomes foul and ordinarily comes out.

B.—I heard a method mentioned at the State meeting which struck me as being effective. You take a separator and get as much space as possible, then place your gutta-percha between the teeth and take the separator off leaving the gutta-percha to hold the teeth firmly apart.

G.—The trouble with the separator is that you are liable to check the margin of the cavity with it before you have done any trimming; that is to say, you introduce the separator to get space and you are more liable to check the enamel then than if the separator were used at any other time.

D.—I do not believe in the use of rubber for separating teeth. I think it is cruel to use it on account of its tendency to wedge above the gum margin. Waxed tape or cotton packed into the cavity as tightly as possible is about the best thing to use.

G.—Why is rubber objectionable?

A.—D. is speaking of rubber, and you (G.) are talking about gutta-percha.

D.—Gutta-percha is all right if you get the space.

G.—You can always get the space with gutta-percha.

D.—Take two proximal cavities in incisors, the corner of one tooth laps into the other; do you mean to tell me the placing of gutta-percha between those two teeth is going to wedge them?

G.—Every time.

A.—It has to be frequently changed.

G.—If you have any trouble in wedging with gutta-percha, you simply do not do it right, that is all.

D.—In how long a time can you wedge with it?

G.—You can gain all the space you require between two incisors in about a week with three changes.

D.—I can get sufficient space in one sitting with cotton saturated with gutta-percha.

G.—Yes, but your teeth will be sore.

D.—No, not necessarily.

G.—Your tooth will be sore by the time you get it filled. It would not be as comfortable as it would if you took a longer time to do the separation.

D.—I have more space with one application of cotton saturated with gutta-percha in two days than you with two or three applications of gutta-percha.

G.—I have had that done, I know the unpleasantness resulting from such rapid wedging.

A.—What are the expansible properties of gutta-percha dissolved in chloroform when a piece of cotton is soaked in it?

(No answer).

D.—It is unnecessary to separate it thoroughly. I simply cover the surface.

G.—Would not sandarac varnish do just as well?

D.—I place dried cotton within the tooth, pack it as tightly as possible, then take a burnisher dipped into the solution and cover the surface.

A.—The teeth having been separated, how would you determine the choice of filling materials?

E.—According to the age of the patient.

A.—Say the patient is twenty-five years old.

E.—I should depend for choice of materials upon the structure of the tooth, whether soft or well organized.

A.—Is it not a fact that a tooth at twenty-five is as hard as it is ever going to be?

E.—In my experience I have seen changes in the structure of the teeth after that age. I have found some teeth that were soft and others that were hard.

A.—Take an average case.

E.—Well, if we take an average case a great deal would depend upon the finances of the patient.

A.—Leave that out of consideration.

E.—If the decay had passed beyond the cervical or gingival margin, I should probably put in a silver filling down at the cervical margin.

A.—What do you mean by a silver filling?

E.—I mean a combination of silver and tin.

A.—You mean an amalgam filling,

E.—Yes, or an alloy filling.

A.—What is the difference between the two?

E.—I do not know myself practically, any more than that I prefer an alloy filling. It is claimed that there is less expansion, less change in the material.

G.—Alloy and amalgam are one and the same thing.

C.—There is no alloy filling, it is an amalgam filling.

E.—We will call it an amalgam filling, then.

C.—Well, what would you do?

E.—After that is hardened sufficiently, I would close up the cavity with cement, then at the next sitting I would prepare the amalgam as if it were a cavity margin.

A.—As if it were the bottom of the cavity?

E.—Yes.

C.—You then fill it with gold?

E.—Yes.

C.—Why not use tin and gold in a place like that? You have the rubber dam on, and you can just as well do it with tin and gold.

G.—He is speaking of cavities that extend pretty well up on the necks of the teeth under the gum, where in all probability you could not reach to protect them thoroughly with rubber dam.

C.—It is proper to use tin and gold there.

E.—I do not feel expert enough to make a satisfactory operation with tin and gold. Dr. Allport claims that, providing one is expert, in having the gold outside of the tin and that against the wall of the tooth, and along the cervical margin, it would be sufficient protection for the margin and a lasting operation; but, comparing the two, I think we have better security with the amalgam. There is less liability on the part of the patient in using a gold or wooden tooth-pick to pick out that portion of the filling. I think the solidity is greater with amalgam.

G.—Is not an operator who can use noncohesive gold dexterously, capable of using tin and gold combined?

B.—The combination of tin and gold is more easily manipulated than noncohesive gold. It can be placed along the cervical border of these cavities in as short a time and with a greater facility and security than the amalgam.

G.—I have great faith in tin and gold.

A.—For what reason?

G.—Because of its being easily and readily adapted to the margins of the cavity solidly. That is what protects the teeth, the proper adaptation of filling materials to the margins of cavities and the finishing of the margins.

A.—Do you think close mechanical union is obtained between gold and amalgam when you fill with gold against the amalgam?

D.—No sir.

A.—Do you think it is as close as it is between the gold and tooth structure?

D.—No.

A.—Why not?

D.—Because there is more or less of a change occurring all the time in amalgam fillings, and the tendency would be in time for it to draw away from the gold.

A.—Is it a fact that if you pack gold to amalgam that has been previously placed into a tooth, that the gold in time discolours in consequence of contact with the amalgam?

D.—I have not seen that.

E.—If it discolours at all, as far as my experience goes, it occurs on the margin of the gold where the union is, but I am careful not to extend the amalgam too high up, so that it will be noticeable.

A.—What condition of the teeth would cause you to make the whole filling of gold? What shape of cavity?

E.—Where the cavity does not extend below (or above) the margin of the gum.

A.—If you decide to fill the whole of the cavity in a bicuspid tooth that extends up to the margin of the gum with gold, how do you start the filling?

E.—Well, I would start it as I did in a case to-day—from the crown. Supposing the cavity is shaped properly, I commence at the grinding surface and work along the palatine margin till I get down to the cervico-palatine corner. I put noncohesive gold in the bottom of the cavity, holding it in position with an instrument, and carry that right over to the buccal side.

A.—You say you place noncohesive gold in the bottom of the cavity a layer of it. What do you mean by layer?

E.—A piece of cylinder gold.

A.—Is that a home-made cylinder or a manufactured one?

E.—It is a manufactured gold cylinder.

A.—What size was it?

E.—It was sufficient to cover the bottom.

A.—Then it was No. 2, probably.

G.—What is the object of commencing your filling in the crown of the tooth?

E.—I wanted to crawl along the edge to see that my margins were perfectly filled as I went along.

A.—You must have had a groove toward the palatine surface of the tooth or you could not carry the gold along there.

E.—Yes, I did have a slight groove.

G.—Wouldn't you obstruct the light of the cavity by filling on the side that way?

A.—He only filled one side.

E.—That does not obstruct the light.

A.—I have never filled a tooth in that way in my life.

G.—I don't see anything to be gained by it.

D.—Would there not be a tendency, after putting a layer of noncohesive gold at the bottom, using cohesive gold afterward, to "ball up" by reason of your having one side filled with a surface to which the gold would cohere?

E.—I did not find it so.

G.—That practice may be all right. Probably he can do it that way. But in starting the filling upon the crown of a tooth and then working down into the cavity, it does not seem

possible that the gold can be properly packed in the bottom of the cavity.

A.—If the adjacent teeth were out, you could do it easily enough.

G.—Yes, but we are not talking about the adjacent teeth being out.

D.—If I were going to perform that operation, I think of the two sides of the cavity I should prefer the buccal to the palatal to begin on. The weakest point in any filling (proximal filling) in the posterior teeth is the side of the cavity nearest the cheek.

G.—That is the buccal side. Is it true that the buccal side is the weaker?

C.—It is the worst side to fill.

G.—Is it decayed more?

C.—I have not noticed that particularly.

D.—I had a case in the office to-day where I was obliged to repair a gold filling on the proximal surface of a lower third molar. The lady complained of sensation on that side, but I could not find any cavity. I finally separated the teeth with tape and then found a defect between the filling and tooth. I drilled this out and repaired it with gold.

G.—The patching of gold fillings with gold is a total failure.

D.—I do not see it.

A.—There are some exceptions to that. If a piece of the enamel breaks away from a gold filling that extends to the cutting edge of a central or lateral incisor, and there is plenty of room for anchorage, you can sometimes repair those cases.

G.—I speak of decay, not from breaking away of the enamel. I certainly think that patched gold fillings are miserable failures.

A.—That is, patched with gold.

G.—Yes, because at the junction of the enamel and the filling there is always a vulnerable point for secondary decay.

C.—That is, at the junction of the old gold, the new gold, and the enamel.

G.—Yes. If decay has taken place around a filling, it has usually gone farther than it appears. Therefore, I say, they are invariable failures.

A.—To return to the original subject under discussion, if you finally succeed in filling that tooth with gold, how do you leave the surface? Do you allow the gold to project beyond the enamel, or leave the surface flat?

E.—I try to contour it, but I do not believe in extensive contouring.

A.—You do not knuckle the teeth?

E.—No.

A.—Especially when the pulp is alive?

E.—No.

A.—What was the shape of the anchorage to the crown in that tooth? Did it extend through the fissure?

E.—Yes. It was a compound cavity.

A.—Was the gold hammered in the fissures and along the palatal wall?

E.—No. I used hand pressure mostly for that part of the filling.

B.—Where did you begin the filling, in the fissure or under the lingual cusp?

E.—I began in the fissure.

A.—Was it a distal or mesial cavity?

E.—A distal cavity.

G.—First or second bicuspid?

E.—It was a first bicuspid. The other bicuspid was in position. I filled that a day or two previously.

C.—You filled that one first. Why didn't you fill the other one first, and fill that one afterward?

E.—It would doubtless have been better to fill the first bicuspid first.

B.—I do not agree with you.

G.—Nor do I. I am satisfied that the mesial cavity of a second bicuspid, in case both teeth are decayed, should be filled before the distal cavity in the first bicuspid.

C.—Why is that? I always fill the distal cavity first when I have two.

A.—You fill the mesial cavity first and the distal cavity second. What are your reasons for it?

G.—One reason is you have light. If you use a matrix in filling a distal cavity of the first bicuspid you will never fracture the walls of the other cavity, because you have the gold to pack to. I almost always use a matrix on distal cavities, in bicuspid and molars.

A.—The reason I fill the mesial cavity in a second bicuspid first is because of light.

G.—That is the one feature.

A.—If I fill the other first my light is gone. Some time ago I filled a mesial cavity in a second bicuspid extending over into the crown. To-day I filled a distal cavity in the first bicuspid, and was thinking of the subject of filling teeth about that time. I was much impressed, on account of the darkness of the day, with the advisability of filling the mesial cavity first.

G.—In using a matrix it would be very important.

C.—I think the distal cavity is always more difficult to fill. If the other cavity is not filled then I get plenty of light. The buccal point on the distal cavity is the one I consider the most difficult to reach and fill. If I have both cavities open I can see what I am doing in the distal cavity. For that reason I fill it first.

A.—A brightly polished surface of a mesial gold filling will reflect some light in the cavity. By the aid of a small mirror you can get all the light in there you want. I wonder what the usual custom is in filling distal and mesial cavities between molars and bicuspid, whether the majority of distal cavities are filled first or mesial cavities.

C.—That is, whether they are filled at the same sitting or not.

A.—Yes.

D.—I always make a cavity in either the distal or mesial portion of the posterior teeth come to the grinding surface.

G.—Do you do that in every instance?

D.—Yes, I do.

B.—You may find this state of affairs. For instance, a large distal cavity in an upper bicuspid and a very small mesial cavity in the first molar with very little undermining. You would not open a cavity of that kind in a molar out to the grinding surface?

D.—Yes, I would as a matter of protection. You fill a small cavity like this and it brings the line of your filling right where the teeth touch, and you will have to refill sooner or later. It is better to bring it to the grinding surface, though you need not carry it far onto that surface.

A.—Following out that theory you would have cut the whole of the mesial surface of the molar away, so that when the filling in the bicuspid was completed and the teeth closed together again nothing would touch except gold and gold.

B.—It seems to me in many cases that would be an unnecessary sacrifice of tooth tissue.

A.—I think, theoretically, it is correct to cut down; but practically there are a great many cases where it is not necessary.

D.—As a rule failure will occur afterward unless it is done.

A.—Well, if the teeth are young, yes; but if they are not, no. In a person of thirty years of age or upward, perhaps there would not be a recurrence of decay.

G.—There will be in time, but it would be a great many years.

D.—If the person uses a toothpick at all, and he damages the margin of the cavity the slightest, the food is going to catch there very readily, and in a short time you are going to have a recurrence of decay in that way without simply the fact of the secretions being held at that point where the gold and tooth structure are together. The use of the toothpick is going to injure that margin.

B.—If the proper kind of toothpick is used it will not injure the enamel margins.

D.—What is the proper kind of toothpick?

B.—A quill toothpick.

D.—It would depend upon the kind of filling you used.

B.—A gold filling is what we are talking about,

D.—I have seen gold fillings picked out with a toothpick.

B.—Then they were not creditable gold fillings.

—*Exeunt Reporter.*

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DESTROYING PULPS.

REPLY TO PRACTITIONER IN OCTOBER :

Where a pulp is inflamed, the application of arsenious acid increases the pain. Relieving the inflammation by bleeding has been, in my hands, a comfortable proceeding.

In many cases I have given nitrous oxide gas to the patient, where the acid does not act kindly, and with everything at hand, during anæsthesia, have opened pulp canal freely, by aid of engine and burs, and with barbed broaches severed the pulp from its connections.

CLAUDE A. SOUTHWELL, D. D. S.,

Milwaukee.

MEMORANDA.

Do you use aristol?

Have you tried aqua ozone?

Have you tried distilled water injected as a remedy for neuralgia?

The manufacture of false teeth for horses is a new industry in Paris.

Dr. S. A. Garber, formerly of Tipton, Iowa, has moved to Cedar Rapids, Iowa.

M. Pourchet, the Secretary of the First International Dental Congress is deceased.

Sulphate of zinc as an after-treatment of an abscessed antrum is very useful as an astringent, 1 to 3 gr. to the ounce of tepid water.

A physician in England died recently, from cocaine poisoning—in an attempt to stop the toothache—using it in the cavity of the tooth.

THE WORLD'S COLUMBIAN DENTAL MEETING 1893.

The executive committee will meet in Chicago, January 11, 12 and 13, 1892, at exposition headquarters.

Dr. W. Geo. Beers, of Montreal, the editor of the *Dominion Dental Journal*, was a recent visitor to the World's Fair City. While in Chicago he was the guest of Dr. C. N. Johnson, a member of the staff.

The Washington City Dental Society celebrated its Silver Jubilee at "The Shoreham," corner of Fifteenth and H. Streets, Monday evening, Nov. 23, 1891. An essay by Dr. L. C. F. Hugo was read, and a good time was indulged in by those present.

NOTE.

Next month we will furnish the conclusion of Dr. Gilmer's paper by publishing the results of his experiments with tin and artificial dentine—made too late for this issue to be incorporated in his exceedingly interesting paper.

NOTICE.

Please say in the next *Review* that the annual transactions of the National Faculties Association for 1891 with Codified rules are issued and that copies can be secured by addressing the secretary,

J. D. PATTERSON,
Keith & Perry Building, Kansas City, Mo.

NOTICE.

You are cordially invited to attend a lecture to be delivered by Prof. W. C. Barrett, of Buffalo, N. Y., at the Chicago College of Dental Surgery, north-east corner of Michigan Avenue and Randolph street, on Thursday evening, December 17th, at 8 o'clock. Subject: "The analogies of bone and tooth tissues, the essential identity of their inherent diseases, and the demand for like general treatment."

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

The annual meeting was held November 17; Dr. Gardiner delivered the annual address. The society was entertained by the President. The following officers were elected for the ensuing year: President, Garrett Newkirk; Vice President, W. B. Ames; Secretary and Treasurer, Edmund Noyes; Curator, P. J. Kester; Member of the Board of Censors, E. D. Swain.

"TOOTHACHE GUM."

George A. Devlin and James B. Patterson are rival manufacturers of chewing gum which is alleged to be good for toothache. Devlin says he discovered the process of making such an article first, has applied for a patent and that Patterson is now making an imitation gum, is printing circulars like his, and is infringing upon his rights. He brought suit yesterday against Patterson setting up these facts and asking that he be restrained from manufacturing the gum.—Ex.

The dental department of the Homœopathic Hospital college of Cleveland opened with twelve matriculates present. Until the completion of the new college building the faculty have secured the rooms 38 and 39 in the Y. M. C. A. building, corner of Prospect and Erie streets. In the absence of Dr. W. H. Whitslar, on account of illness, Dr. S. B. Dewey has temporarily filled the position of Dean. Dr. Wilson, of Painesville and Drs. J. E. Robinson, H. Barnes and I. Samsell, of Cleveland, give instruction in the several branches assigned them in the annual announcement.

We have received a copy of the Revised Code of ethics of the Isaac Knapp Dental Coterie, of Fort Wayne, Indiana. This Coterie is made up of the practitioners of Fort Wayne, and one of its principal aims is to foster and maintain good fellowship and brotherly love among its members. The features wherein the "Revised" code differs is the addition of the following sentence to Section 3, of Article II: "It is unprofessional to resort to public advertisements, cards, hand bills, posters, or signs, (*with designs, emblems, or cuts representing instruments or teeth, artificial or natural*) calling attention to peculiar styles of work, etc." The Coterie is evidently a progressive body.

Mrs. Jane Campbell, a highly esteemed young woman of Mount Nebo, is dead from the tragic effects of undergoing an operation in a dentist's chair. At one sitting a Columbia dentist extracted eighteen teeth. She bore the prolonged suffering without wincing, but profuse hæmorrhages set in almost immediately. She was unable to go to her home, a dozen miles distant, and lay in a friend's house several days before physicians were able to stop the flow of blood. Speaking of her case, a physician says that she "bled like a pig."

The unfortunate woman was then removed to her Mount Nebo home. Soon afterward the bleeding began again, and, notwithstanding all that medical science could do, she slowly bled to death.—*Exchange*.

FORCEPS FOR EAST INDIA.—THE BELIEF THAT EVIL SPIRITS CAUSE THE TOOTHACHE HAS DIED OUT.

East India has a dearth of dentists. She no longer believes that the toothache is an evil spirit, so she has sent some of her sons to this country to learn dentistry. One of them arrived at the barge office yesterday, says the *New York Advertiser*. He is Martin Zoebel, and is tall and swarthy, although a delicate-looking young man. He is detained pending a medical examination.

Martin came over in the steerage to save money and study human nature. He found plenty of subjects for study. Martin is bright and intelligent, and is the son of a wealthy East Indian planter. His ill health is due to fifty days of travel under trying circumstances. He expects to study at the Philadelphia Dental College. "Our people," he said yesterday, "are fast becoming enlightened. The 'good' and 'evil' spirits so much believed in years ago are losing their hold. A toothache years ago would be accepted with resignation by the average East Indian, but the contact with travelers has been the means of completely reversing this belief, and we now look for toothache drops and hot applications as a relief for toothache as eagerly as the more enlightened.

"This diversion from time-honored custom is naturally followed by other diversions, and now the dentist, with his forceps and rubber plates and gold fillings, has become a much desired adjunct to the East Indian's life. There is a demand for dentists in my country, and that's why I am going to Philadelphia to study."

ST. PAUL DENTAL SOCIETY.

At St. Paul, Minnesota, on the 4th day of November, a few of the enthusiastic dentists met and organized what is to be known as the St. Paul Dental Society. The spirit manifested points to a successful and harmonious consummation of the wishes of those who have the interests of the project at heart. The officers elected are as follows:

President, Dr. C. H. Goodrich.

Vice-President, Dr. B. C. Cornwell,

Secretary, Dr. Chas. A. Van Duzee.

Treasurer, Dr. T. H. Jacobs.

Very respectfully,

CHAS. A. VAN DUZEE, Secretary.

SOLICITING !!

To the Editor of the Dental Review:—Enclosed you will find *copy* of letter received by one of my lady patients, from a dentist down town, which she very properly handed me. Not satisfied with underbidding me, he offers to give her credit for the sum of \$5.00 which she had paid me. Will you please give it space in your columns and oblige a subscriber. C.

Miss ————

——— Yale St., Englewood.

Mr. ——— spoke of you relative to having some dental work done, also that you had made a deposit of \$5.00. Would say would be pleased to finish your work as I would like to introduce first class work among your friends. Will also give you credit for the \$5.00 you paid so you won't be out any money extra. Would be pleased to hear from you, also bring this letter.

Very respectfully, etc.,

———
No. — Wabash Ave., Chicago.

Is this usual?—Ed.

ABSORPTION OF DRUGS FROM OINTMENTS.

BY DR. A. P. LUFF.

The author describes some experiments he has made with the object of ascertaining to what extent drugs spread upon the skin in the form of ointments are absorbed into the general circulation. The several ointments containing soluble

drugs were prepared, and each ointment was placed inside a sheep's bladder; the bladder was suspended in a beaker of distilled water, kept at a uniform temperature of 98° F. in a water bath. The ointments were prepared with three different substances as a basis, viz., vaseline, lard and lanolin. The results of these experiments are thus classified: Vaseline and iodide of potassium, exosmosis commenced at end of *one hour*; lard and iodide of potassium, at end of *nine hours*; lanolin and iodide of potassium, *nil* at end of *twenty-four hours*; vaseline and carbolic acid, exosmosis commenced at end of *two and three-quarters hours*; lard and carbolic acid at end of *seven hours*; lanolin and carbolic acid, *nil* at end of *twenty-four hours*; vaseline and resorcin, exosmosis commenced at end of *ten hours*; lard and resorcin, at end of *fifteen hours*; lanolin and resorcin, *nil* at end of *twenty-four hours*. These experiments have all been performed with sheep's bladders, but the author hopes to be able to publish the results of further experiments on the living subject. The practical lesson to be learned from this paper is that if an ointment is employed with the view of its active ingredients being absorbed, then vaseline is by far the best excipient to use; but if an ointment is employed for its local effect only, absorption of its active ingredient not being desired, then lanolin is the best excipient for such an ointment.—*Jour. of Dermatology*.

INVITATION TO THE ANNIVERSARY MEETING OF THE FIRST DISTRICT SOCIETY OF NEW YORK.

The members of the profession are cordially invited to attend the Twenty-third Anniversary Meeting of the First District Society, to be held at the Academy of Medicine, No. 17 West Forty-third Street, New York City, January 18, 19 and 20, 1892.

This meeting will be one of prime interest and a large attendance is confidently expected. The essays to be read will be in the hands of the committee in advance and copies will be supplied to those who have kindly promised to discuss the topics. About thirty eminent men will thus be upon our programme prepared in advance to take part in the proceedings, in addition to which there will be the usual general discussion open to all who attend.

As heretofore announced, our clinics will be devoted to the introduction of entirely new methods, inventions, appliances, instruments or medicaments. We have already arranged for several, which alone will repay those who attend, and are in correspondence about others, which will probably be secured. Any one desiring a place in our clinics should write immediately to Dr. F. A. Roy, No. 148 West Seventieth Street, New York.

The Academy of Medicine is convenient to several fine hotels, where rooms may be had for \$1 per day. Gentlemen who decide to attend may obtain all information as to hotels, railroads, etc., and receive special programme of meeting as soon as ready, by addressing the chairman of the committee.

The profession will kindly accept this as an official invitation to our meeting, and not wait for a special one.

M. L. RHEIN, M. D., D. D. S.

GEO. H. WINKLER, D. D. S.

RODRIGUES OTTOLENGUI, M. D. S.,

115 Madison Avenue, Chairman.

A BOGUS DIPLOMA MILL FOR DOCTORS AND ALSO DENTISTS—THE HISTORY OF SOME DIPLOMAS THAT WENT TO CALIFORNIA.

It appears that the "Medical University of Ohio" did not stop in the line of

medicine, but that it likewise issued diplomas for the practice of dentistry. The evidence comes in the shape of a number of letters from the California State Board of Dental Examiners to Dr. H. T. Smith, Secretary of the Ohio College of Dental Surgery. The first of these bears the date of December 22, 1890, and reads: "The California State Board of Dental Examiners has had presented to it for endorsement a diploma bearing the heading of the 'Medical University of Ohio.' Said diploma also states that it is a 'special' diploma issued by the 'Medical University of Ohio' for the purpose of the practice of dentistry. The Board knows of no such college, and would be greatly obliged to you if you would kindly tell us what you know of such college. Would the Ohio State Board of Dental Examiners accept such a diploma and allow the owner to practice in the State of Ohio? Hoping you will pardon the liberty, &c." It is signed by W. F. Griswold, Secretary. In a marginal note, Dr. Smith indicates the nature of his reply: "Do not know of any."

The second letter offers a copy of the diploma, as follows:

The Medical University of Ohio.

Special

Diploma.

This certifies that John D. Van Vleck, M. D., having successfully passed a special examination in the Department of Dentistry and Oral Surgery, is qualified to practice in the above departments.

In testimony whereof we, the Professors in said departments and the President of the University, do hereby affix our names and the seal of the University of Cincinnati, Ohio, this 1st day in the Month of March, in the year of our Lord MDCCCLXXXVIII.

B. F. EVANS, D. D. S., M. D.,

CHARLES BRADLEY, M. D.,

Professor of Anatomy.

G. W. VAN VLECK, A. M., M. D.,

President of the University.

JOHN M. DIXON, M. D., Secretary.

The third letter bears the date so recent as November 3d., 1891. It is from the same source, and reads: "There has been a diploma from the Medical University of Ohio presented to the California State Board of Dental Examiners for indorsement. All the evidence we have been able to gather has been derogatory of said university, and we understand from the annual report of the medical colleges of 1890 that it is nothing more or less than a diploma mill. Now, what we want to know is the standing of that college from 1886 to 1888. All the knowledge we have of the institution in its favor is in 1886, and as this man's diploma is dated in 1888 we have reason to believe that such diploma was awarded him for a compensation. Kindly find out all you can of this institution." The remainder is unimportant.—*Commercial Gazette, Cincinnati.*

EXTRACTED A HORSE'S TOOTH—AN UNUSUAL SURGICAL OPERATION AT A VETERINARY COLLEGE.

An unusual surgical operation was performed recently at the Chicago Veterinary College. Dr. T. W. Chandler performed the operation, assisted by Dr. Joseph Hughes, Professor of Veterinary Anatomy. Relieved of its technicalities the operation was the pulling of a horse's tooth, one of those huge back teeth on the lower jaw.

Ordinarily it was not difficult to pull a horse's tooth. The horse dentist has reached a point in his profession where he can extract an ordinary tooth expeditiously and painlessly. But this was not an ordinary tooth. It was decayed on the surface and ulcerated at the roots, and one that resisted all ordinary treatment. The poor horse had suffered with this rebellious member for nearly a year. It could not sleep and with great pain and difficulty masticated its food. Its humane owner determined to procure relief if possible. Dr. Chandler was appealed to and he concluded to perform an operation.

The animal was brought into the lecture room of the college yesterday afternoon in the presence of 150 students and a number of interested spectators. The operating table is several feet longer and broader than the ordinary horse. It is so arranged as to be "stood up" along side of the horse, and has attached to it numerous strong straps which are passed around the body and neck of the horse. When the straps are properly adjusted a windlass or crank is manipulated in such manner as to bring the table to a horizontal position. Huge chains with leather hoof attachment are then passed over the horse's ankles, by which its feet are securely fastened to the table. The horse kicks and struggles of course, but without avail. It is absolutely secure.

Dr. Chandler in an address to the students explained the delicacy of treatment required in performing the operation of trephining for a carious root. Speaking of what was to be avoided he said: "If I cut the nerves I produce paralysis of the lips; if I cut the artery facial paralysis will follow, and if I cut the Steno duct I deprive the mouth of its saliva."

All this meant that the professional expert proposed to cut through the jaw of the horse at a point opposite the ailing tooth, and by cutting the gum inside reach the roots of the tooth.

Prior to using the Knife Dr. Chandler hypodermically injected two and a half ounces of cocaine. The knife was then used in making an opening two and a half inches in length, during which time the animal remained perfectly quiet. The surgeon then thrust his arm into the mouth of the horse, which an attendant held open, to satisfy himself as to the location of the opening and the tooth, after which an auger was thrust into the cut and the boring process around the root of the tooth began, the horse kicking vigorously. This accomplished, the auger was removed and an iron wedge inserted. Dr. Chandler again inserted his arm into the mouth of the horse and placed his fingers immediately beneath the ulcerated tooth, while Dr. Hughes mildly employed a mallet on the iron wedge in an effort to dislodge the tooth. It was a tedious and evidently painful proceeding. The horse protested by way of kicks as vehemently as a mule would have done. So tenaciously did the refractory tooth cling to the jaw that it took five minutes to dislodge it. It finally gave way, and when Dr. Chandler withdrew his hand from the mouth of the horse the great molar lay all bloody in the palm of his hand. The operation was over. It was successful in every detail. The long, ugly cut in the jaw was saturated with an antiseptic and the animal permitted to again stand on its feet.—*Chicago Herald*.

NOVA SCOTIA DENTAL ASSOCIATION—THE FIRST ANNUAL MEETING—NEW LAWS GOVERNING THE PROFESSION.

The first annual meeting of the Nova Scotia Dental Association was held at Y. M. C. A. hall, Halifax, recently. It is about eight months since an act of in-

corporation was granted the dentists of this province. Dentistry for the first time takes its place as a legally recognized profession. The act is substantially the same as that which governs the medical society. The law requires every man practicing dentistry to register his name and qualifications in the dental register and to have a certificate of license to that effect. For some months the work of registration has been going on, until now it is found that about seventy persons are practicing in this province. Many of these are men who have been in practice for years, whose names are well known throughout the province, and it is the unswerving integrity and determined loyalty of these men to the dental profession that has educated the public so that they require a high standard of dental education.

During the last few years a large number of young men have entered the profession, and to their credit be it said that the greater number of them have taken a regular course of study and graduated from the best American colleges. Henceforth students of dentistry must pass as rigid a matriculation examination in order to begin their studies as is required from medical students. By the vigorous way delinquents were reported as disregarding the registration law, it will be a serious matter for men to neglect its provisions. This will stop "dental royalty," who extract teeth on the street corners and sell tooth wash on the parade.

The meeting was a representative one, largely composed of young men full of enthusiasm and inspired with the purpose to make the dental profession worthy the confidence of the public. At the first session the President, Dr. A. J. McKenna, occupied the chair.

His opening address was suggestive and outlined a policy of action that can only reflect credit on the profession if carried out.

The executive committee reported a programme consisting of several papers and clinics. The election of officers resulted in the re-election of Dr. McKenna to the Presidency of the association, Dr. F. W. Ryan and Dr. A. C. Cogswell, Vice Presidents. The Secretary, Dr. Frank Woodbury, is elected by the dental board.

The provincial dental board also held its annual session. The President of the board, Dr. A. C. Cogswell, occupied the chair. The members present were Dr. G. Hyde, of Truro, Dr. M. P. Harrington, of Liverpool, Dr. H. Woodbury, Dr. C. K. Fiske, Dr. J. A. Merrill and Dr. Frank Woodbury, of Halifax.

This body is the court of the association before whom all matters respecting the government of the profession come and are decided.

At a subsequent meeting Dr. A. C. Cogswell read a paper on dental ethics, which aroused a great deal of interest and brought out considerable discussion. The fact that the profession has had absolutely no organization, every man has had a code of ethics of his own and modes of bringing his qualifications to the notice of the public, that must, of course, in some cases be unique and perhaps become prejudicial to the interests of his dental neighbor. These methods will from this time forth be considered unprofessional and frowned upon as partaking of quackery.

A committee was appointed to draft a code of dental ethics and report at the next meeting. The dental act is to be subjected to revision, and was put into the hands of a committee.

After a most instructive and interesting session the first annual meeting of the Dental Association was adjourned, to hold its next session in Kentville.

FIRST CASE OF ACTINOMYCOSIS HOMINIS OF THE JAW.

Case 1. Mary M., age 28; was visited at her house the 28th of June, 1884, and gave the following history:

"About two weeks ago I began to have a severe toothache in the left side of the lower jaw, shortly afterward a swelling appeared in the throat. I had great pain in swallowing and was unable to open my mouth. After poulticing my face and neck several days the swelling and pain disappeared. On the 17th of June I was again attacked by toothache with an indescribable ringing in my ears, a swelling appeared in my mouth and on the outside of my jaw, the pain grew more and more severe and the swelling kept on enlarging up to the present."

On examination I found a swelling behind the angle of the left jaw, and found that the patient could not open the mouth more than three-quarters of an inch. The patient had not partaken of food for forty-eight hours. The left tonsil was much enlarged, filling most of the pharynx. A pale yellow spot on the skin indicated an abscess which was about to break. I introduced a lancet and evacuated a small quantity of pus. The patient made a rapid recovery and was about in a few days. From this time till the 8th of July, the patient was comparatively well, but did not regain her strength, and suffered occasionally with toothache. At this time a small swelling made its appearance on the left side of the neck below the jaw. It was accompanied by some pain and inflammation. A few days afterward the patient presented herself at my office, the bunch in her neck was about the size of a walnut, and the surrounding tissue was considerably indurated. Upon examining the mouth I noticed several carious teeth.

I lanced the swelling, it fluctuated and appeared to have considerable pus in it, and I was surprised to find but a few drops of bloody pus. I put in a drainage tube, dressed it antiseptically, and ordered the patient to return in two days. Upon her return I removed the drainage tube and about twenty drops of thick pus oozed from the opening. I was impressed by the peculiar sulphur colored granules it contained, which I examined with the microscope and recognized them as actinomyces (Strahl-pilz). I prepared a number of specimens and showed them to Drs. Fenger, Bridge and Kerber, who agreed with me in my diagnosis. I kept the patient under my observation for ten days, and each day procured new specimens. As the swelling and induration kept increasing, and as the patient was rapidly sinking I advised her to go to the hospital. Here I had Dr. Belfield examine the case; he procured specimens and pronounced it actinomycosis. After a few days preparatory treatment, the operation for removal of the growth was performed with the assistance of Drs. Fenger and Verity. An incision was made from the ear to the clavicle parallel to the sterno-cleido-mastoid. A mass of succulent tissue, interspersed with pus and gold colored granules that penetrated the surrounding tissues, was observed. These were removed with a knife and sharp spoon. A carious tooth was removed and a probe passed down from the alveolus into the wound. A portion of the angle of the jaw was chiseled away so as to admit a small spoon, and the alveolus and the canal thoroughly scraped out. After washing out the wound, a tampon of iodoform gauze was inserted into the alveolus, drainage tubes put in, and the wound approximated with silk. The patient made a rapid recovery with primary union. she was up and about on the sixth day. From this time on she rapidly improved, gaining 26½ pounds in five weeks, and is at present in good health. This was the first case of actinomycosis hominis recognized and reported in this country as far as I can find from literature at my disposal.—*Dr. Murphy in the North American Practitioner.*

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